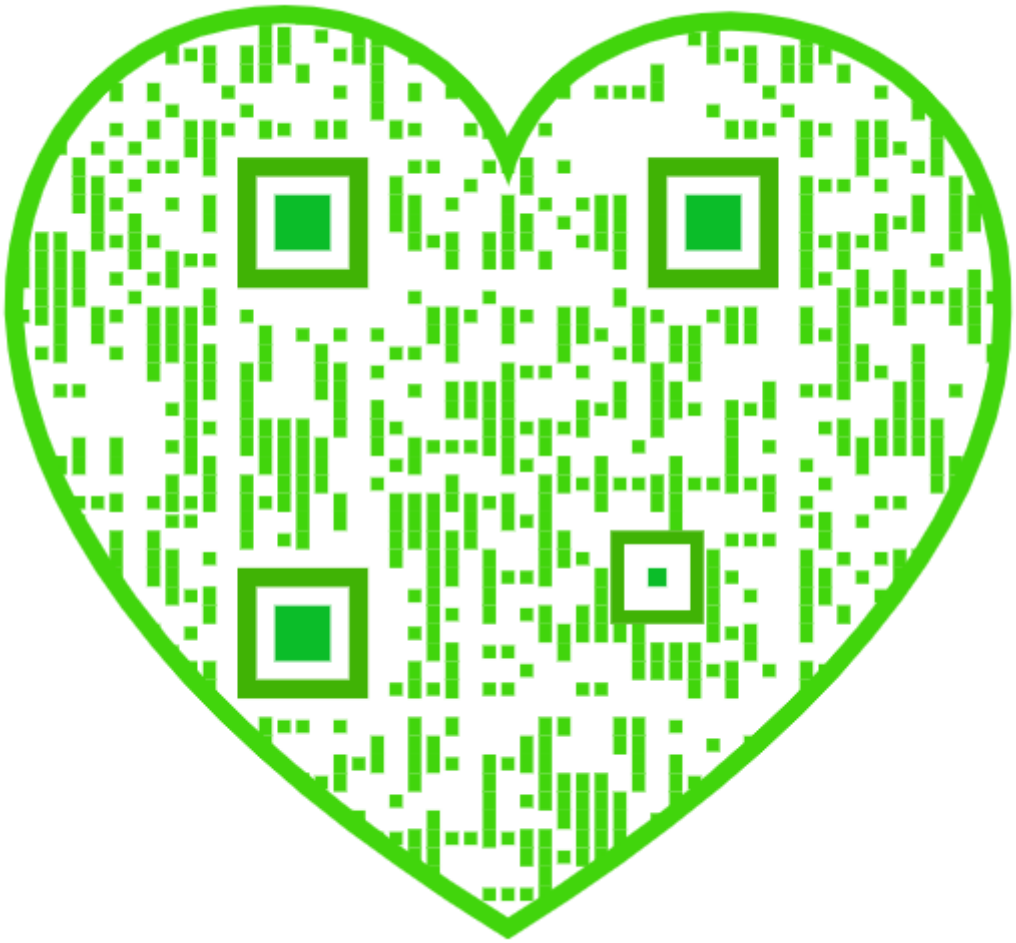

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JANUARY, 1920

PUBLISHED IN SAN FRANCISCO

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- Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.
- Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.
- Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.

CONCRETE REINFORCEMENT
- United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric. L. A. Norris Co., 140 Townsend St., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE REINFORCEMENT (Continued)

Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Steel bars sold by W. S. Wetenhall Co., 450 Irwin St., San Francisco.
Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., 527 Tenth St., San Francisco.

CONDUITS

Garnett, Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL

Barrett & Hilp, Sharon Bldg., San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
R. W. Littlefield, 565 Sixteenth St., Oakland.
Unit Construction Co., Phelan Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
A. D. Collman, 110 Jessie St., San Francisco.
Del Favero & Rasori, 110 Jessie St., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.
Monson Bros., 1907 Bryant St., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
McLeran & Peterson, Hearst Bldg., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.

CONTRACTORS' EQUIPMENT

Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
Harron, Rickard & McCone, Townsend St., San Francisco.
Lansing Company, 338 Brannan St., San Francisco.
Garfield & Co., Hearst Bldg., San Francisco.
Smith, Booth-Usher Co., 40 Fremont St., San Francisco, and 728 Central Ave., Los Angeles.

CONVEYING MACHINERY

Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
P. H. Reardon, 57 First St., San Francisco.

CRUSHED ROCK

California Building Material Company, Call-Post Bldg., San Francisco.

DAMP PROOFING COMPOUND

Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Glidden's Liquid Rubber. The Glidden Company, 123 Hooper St., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Pabco" Damp Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS

Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
Stanley Works, New Britain, Conn.
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS

Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS

Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS

Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
M. E. Ryan, Redwood City, Calif.
Rex Electric & Engineering Co., 253 Minna St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
Electrical Construction Company, 2822 Grove St., Oakland.

ELECTRIC PLATE WARMER

The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT

Sierra Electric Company, 515 Market St., San Francisco.
Garnett, Young & Co., 612 Howard St., San Francisco.
Butte Electrical Equipment Co., 530 Folsom St., San Francisco.
Safety Electric Company, 56-65 Columbia Square, San Francisco.

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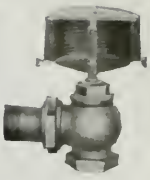

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.

ELEVATOR EQUIPMENT
- Elevator Supplies Company, Inc., 186 Fifth St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.
- Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

ELEVATOR DOOR HARDWARE
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

FANS AND BLOWERS
- John Ringius, 252 Townsend St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
- Pacific Fence Construction Co., 245 Market St., San Francisco.

FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco, 830 S. Los Angeles St., Los Angeles.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.
- Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- General Fire Extinguisher Company, 453 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.
- Asbestos Paints. The Glidden Company, 123 Hooper St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco,

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
- Inlaid Floor Company, 600 Alabama St., San Francisco.
- H. N. McNab, 2307 17th Ave., Oakland.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

GALVANIZED IRON WORK
- Power & Pike Co., 22-24 Main St., San Francisco.
- James A. Nelson, 509 Sixth St., San Francisco.

GARAGE HARDWARE
- The Stanley Works, New Britain, Conn., represented in San Francisco, Los Angeles, Seattle by John T. Rowntree, Inc.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES
- Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GAS STEAM RADIATORS—FUMELESS, ETC.
- Clow Gas Steam Radiators, F. A. Hamilton, Agent, Crossley Building, San Francisco.
- Ra-Do Fumeless Gas Radiators, manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.
J. O'Shea, 2100 17th St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
The Stanley Works, New Britain, Conn.
Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Inlaid Floor Co., 600 Alabama St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC—GAS
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC.
Gilley-Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
James A. Nelson, 509 Sixth St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC. (Continued)
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOLLOW TILE BLOCKS
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
Ralphs-Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.
Chicago Signal Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.
Sonnenschein Bros., 470 Sutter St., San Francisco.
F. A. Taylor & Co., 251 Post St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.

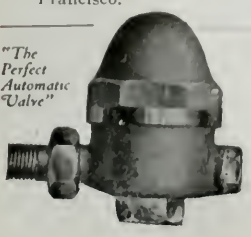
KITCHEN CABINETS
Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

KITCHEN EQUIPMENT
James A. Nelson, 509-11 Sixth street, San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE ARCHITECTS
Neil T. Childs Co., 68 Post St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

LATHING MATERIAL
- Pacific Materials Co., 525 Market St., San Francisco.
- Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
- Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
- Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
- Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
- Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
- D. N. & E. Walter & Co., 562 Mission St., San Francisco.
- The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LOCKERS—STEEL
- George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
- California Redwood Association, 216 Pine St., San Francisco.
- Dudfield Lumber Co., Palo Alto, Cal.
- Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- Pope & Talbot, foot of Third St., San Francisco.
- Portland Lumber Co., 16 California St., San Francisco.
- Sunset Lumber Company, First and Oak Sts., San Francisco.

MAIL CHUTES
- American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
- Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
- Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

MARBLE
- American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
- Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
- Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

METAL DOORS AND WINDOWS
- Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
- U. S. Metal Products Co., 555 Tenth St., San Francisco.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- National Mill and Lumber Co., San Francisco and Oakland.
- The Fink & Schindler Co., 218 13th St., San Francisco.

OIL BURNERS
- American Standard Oil Burner Company, Berkeley.
- Fess System Co., 220 Natoma St., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
- W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

ORNAMENTAL IRON AND BRONZE
- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

OVERHEAD CARRYING SYSTEMS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- The Paraffine Companies, Inc., 34 First St., San cisco.
- Anti-Rust Coatings. The Glidden Co., 123 Hooper St., San Francisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

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D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
Flck Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
The Glidden Company of California, 123 Hooper St., San Francisco.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette." Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER
White Bros., Fifth and Brannan Sts., San Francisco.

PARTITIONS—FOLDING AND ROLLING
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PAVING BRICK
California Brick Company, Niles, Cal.

PENCILS
Eberhard Faber, Monadnock Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE—VITRIFIED SALT GLAZED TERRA-COTTA
Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS
The Paraffine Companies, Inc., 34 First St., San Francisco.

PIPE BENDING MACHINERY
U. S. Shape and Pipe Bending Co., 315 Howard St., San Francisco.

PLASTER CONTRACTORS
A. Knowles, Call-Post Bldg., San Francisco.
MacGruer & Simpson, 180 Jessie St., San Francisco.
James F. Smith, 273 Minna St., San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.
P. H. Reardon, 57 First St., San Francisco.

PUMPS
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
Dow-Herriman Company, 140 Howard St., San Francisco; factory, Petaluma.
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Dow-Herriman Co., 140 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, Monadnock Bldg.

REVERSIBLE WINDOWS
Hauser Window Company, 157 Minna St., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC. (Continued)
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., 525 Market St., San Francisco
Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

ROOFING AND ROOFING MATERIALS
Bender Roofing Company, Monadnock Bldg., San Francisco.
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
The Vulcanite Roofing Co., Texas and 16th Sts., San Francisco.
H. H. Robertson Co., Hobart Bldg., San Francisco.

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
Pacific Materials Co., 525 Market St., San Francisco.

SAND
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK
Jas. A. Nelson, 509 Sixth St., San Francisco.
Power & Pike Co., 22-24 Main St., San Francisco.

SHINGLE STAINS
Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francicco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.
Argonaut Shingle Stains. The Glidden Co., 123 Hooper St., San Francisco.

SKYLIGHTS
H. H. Robertson Co., Hobart Bldg., San Francisco.

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Western Pipe & Steel Co., 444 Market St., San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.

STEEL AND IRON—STRUCTURAL (Continued)
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

STEEL REINFORCING
Badt-Falk & Co., Call-Post Bldg., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron & Steel Company, Fourth and Mateo Sts., Los Angeles.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Truscon Steel Co., 527 Tenth St., San Francisco.
W. S. Wetenhall Co., 725 Second St., San Francisco.

STEEL ROLLING DOORS
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., agents, Underwood Bldg., San Francisco.
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles.

STEEL SASH
Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
U. S. Metal Products Company, 555 Tenth St., San Francisco.

STEEL WHEELBARROWS
Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

STORE FRONTS
Fuller & Goepp, 34 Davis St., San Francisco.

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California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES
Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.

TANKS FOR OIL, GASOLINE, KEROSENE, ETC.
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

TELEPHONE AND ELECTRIC EQUIPMENT
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Direct Line Telephone Co., 320 Market St., San Francisco.

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C. F. Weber & Co., 365 Market St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

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Meese & Gottfried Co., San Francisco, Los Angeles and Portland.
P. H. Reardon, 57 First St., San Francisco.

VACUUM CLEANERS
United Electric Company, Canton, O., manufacturers of Tuec Cleaners, sold in California by San Francisco Compressed Air Cleaning Co., Stockton and Sutter Sts., San Francisco.

VALVES—PIPES AND FITTINGS
Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
General Fire Extinguisher Co., 453 Mission St., San Francisco.
Great Western Supply Company, 549 Howard St., San Francisco.
H. Mueller Mfg. Co., 635 Mission St., San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.
The Glidden Company, 123 Hooper St., San Francisco.
Standard Varnish Works, 55 Stevenson St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VENTILATORS
H. H. Robertson Co., Hobart Bldg., San Francisco.
Power & Pike Co., 22-24 Main St., San Francisco.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.

WALL BEDS, SEATS, ETC.
American Automatic Lock & Lift Co., 72 Fremont St., San Francisco. (Display at 77 O'Farrell street.)
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.

WALL BOARD (Continued)
"Liberty" Wall Board, manufactured by Key-Hold Plaster Lath Co., 148 Hooper St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE CEMENT
"Atlas White," see coast agencies, page 127.
"Medusa White," sold by Pacific Building Materials Co., Underwood Bldg., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass-Hueter Paint Co. All principal Coast cities.
Velvet White Enamel. The Glidden Company, 123 Hooper St., San Francisco.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOWS, REVERSIBLE, CASEMENT, ETC.
Hauser Window Co., 157 Minna St., San Francisco.
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.

WIRE FENCE
Pacific Fence Construction Co., 245 Market St., San Francisco.

WOOD MANTELS
Fink & Schindler, 218 13th St., San Francisco.
Mangrum & Otter, 827 Mission St., San Francisco.

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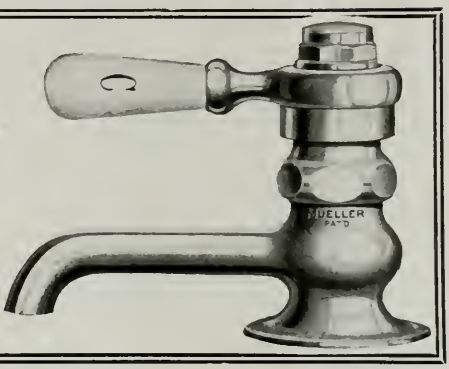


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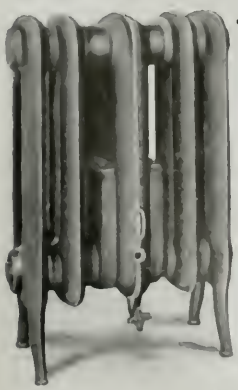

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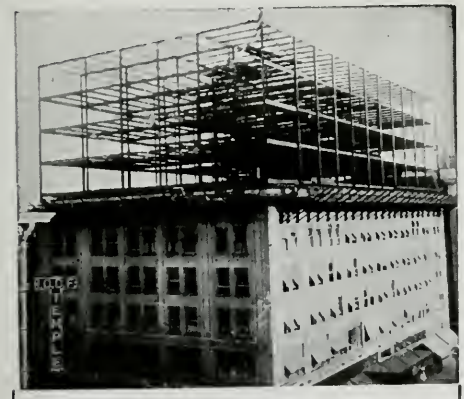


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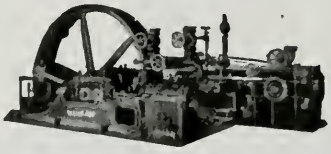

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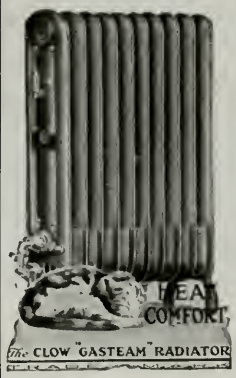


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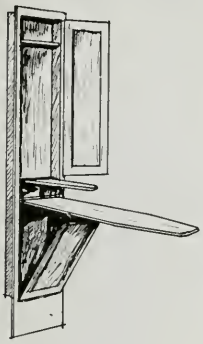

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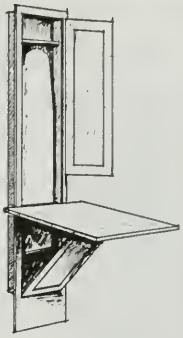

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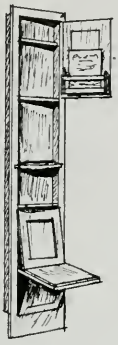

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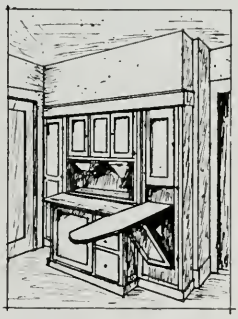

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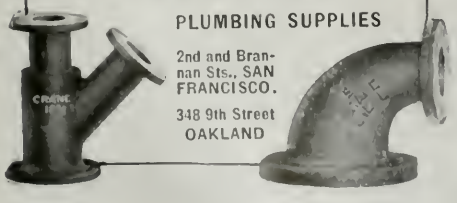

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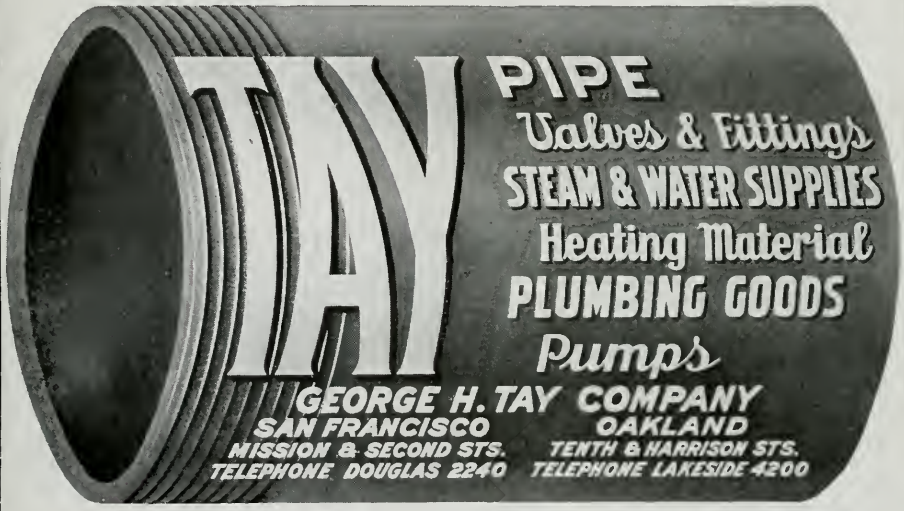
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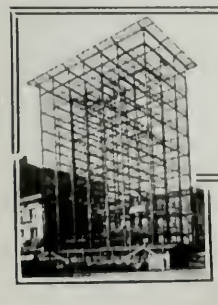

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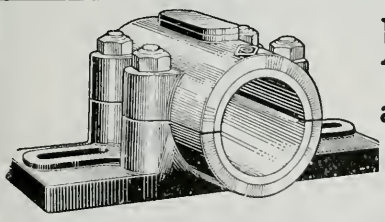

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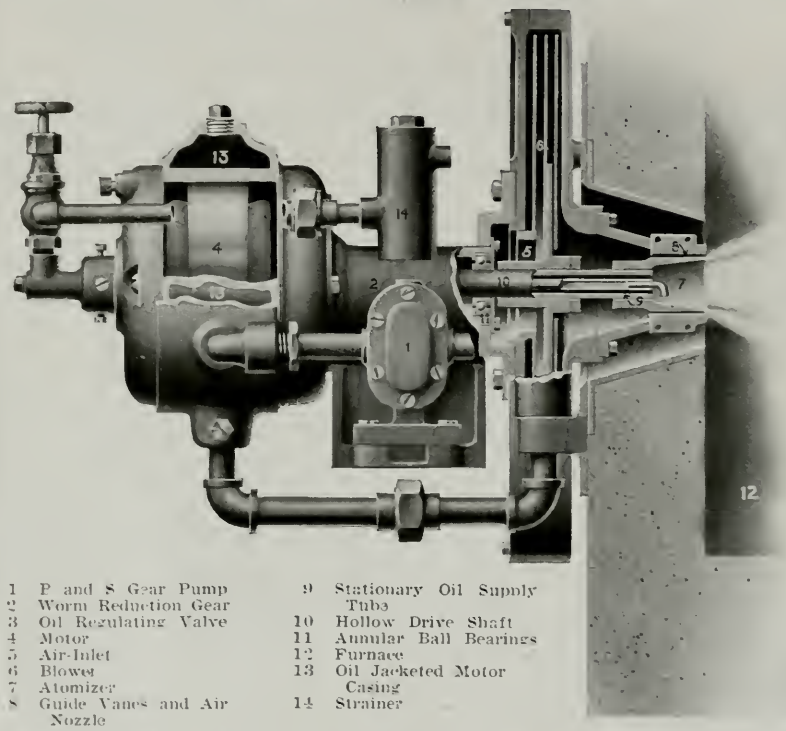


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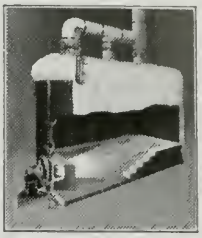

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# The Architect and Engineer

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INTERIOR OF CHURCH
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THE
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JANUARY, 1920 Vol. LX. No. 1.

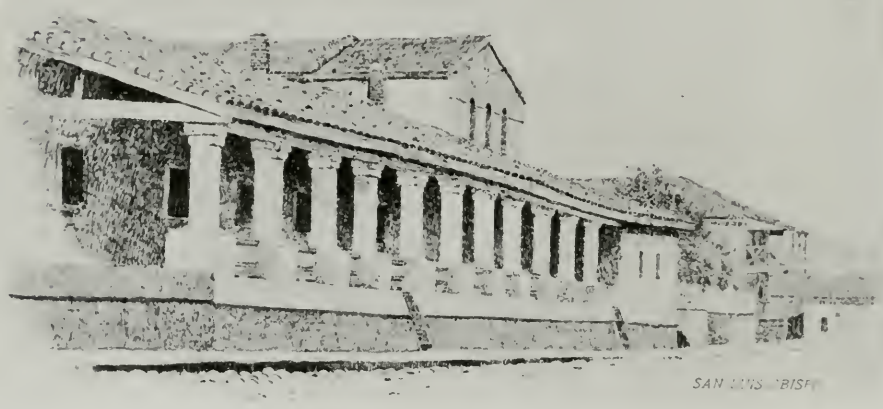
## The Restoration of the California Missions

By IRVING F. MORROW, Architect

THERE is many a familiar apothegm which is habitually accepted at face value, but which none the less, if not subjected to a special or a limited interpretation, is no more than a half truth or even an untruth. Such, for instance, is the glibly iterated saying that history repeats itself. It is true that one may note the recurrence of events more or less analogous, and that certain conditions and problems return with a persistence as dogged as if man were really destined never to reap the profits of experience, but always to remain helpless before the workings of institutions he has himself created. Yet it is a commonplace that the events which the historians record are often the least important facts of an epoch. Its real significance lies in the body of innumerable obscure details which collectively constitute its spirit; and when that has perished, not the most arduous researches of historians and archaeologues, nor the most inspired syntheses of literary and pictorial artists can evoke more than an approximation of what was. Of just one thing may we be entirely certain; namely, that despite the superficial resemblances which startle the unwary and on occasion even intrigue the cautious, no age has ever duplicated a previous one in the particular play of vital forces actuating its inner life. On this point the testimony of the arts, and in particular of architecture, which has ever striven to become their synthesis, is eloquent and ample. History recites the events, often as vain as pompous, which perturbed a people's existence; but its art reveals how it lived and worked and played and felt and thought. And in the light of this evidence we must admit that veritably history does not repeat itself.

For this reason the art of past times possesses a value over and above that bestowed by its intrinsic beauty. Even primitive art is precious, not, indeed, as a standard of attainment, but as a clue to the nature of the people who produced it. When a civilization has perished, the art it has bequeathed is the last authentic evidence revealing a spirit which can never return. Therefore man has come to cherish, and rightly so, whatever relics of the past are illuminating as to the phases and the stages of his own development. This is an obligation, and one which becomes the more binding when the object in question combines beauty along with historical significance.

In California we have been in the past almost wantonly careless in the administration of this bequest. The rapidity and the completeness with



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SAN LUIS OBISPO MISSION ORIGINAL CONDITION
From a drawing by Eugene Leslie Smyth

which an aggressive civilization overcame and displaced a more passive one blinded us, accustomed as we are to bestowing our admiration on the basis of material success, to the beauty and value in what passed away. Our heritage of sonorous and picturesque nomenclature has fortunately suffered little curtailment. From San Diego to the country well north of San Francisco, a distance of some seven hundred miles, there is a continuous succession of rivers and valleys and mountains and capes and bays and towns whose gently modulated names remind us that California was the scene of the last stand in the century-long westward retreat of romance. But the few buildings of the Spanish epoch, along with their contents,—relics which speak the most authentic word to be heard today as to the kind of people who were our first settlers and the manner of life they led—these have suffered deterioration ill befitting their dignity, beauty, and historical significance.

Chief among these architectural monuments are, of course, the Franciscan Missions. Their decline from high prosperity was rapid after the secularization ordered and carried out by the Mexicans in the second quarter of the last century. During the middle and the third quarter of the century they entered upon a period of the most deplorable neglect, a neglect rendered doubly disastrous by the perishable nature of the materials which entered largely into their construction. When the Church was again confirmed in its title and the buildings were once more put to ecclesiastical use in the last quarter of the century, they suffered maltreatment in the name of restoration often hardly less deplorable. Today there is not one of the Missions whose buildings have not seriously dim-

SAN LUIS OBISPO MISSION—PRESENT CONDITION

inished in extent, and but few whose remains have not been to some degree disfigured by incongruous alterations or additions. Of late years the public conscience has begun to awaken to the precarious condition of these remains, and a certain amount of restoration has been effected. Of even more importance than this, in view of the scanty funds which have been available and the lack of an adequate realization of the seriousness of the problem of rehabilitation, was the bracing and shoring up and temporary roofing which have been accomplished to stay the onward march of disintegration until restoration could be undertaken on a proper scale and in a proper spirit. For much of this pioneer work, without which certain of the structures would today certainly be prostrate, I believe we are indebted to the Landmarks Club. The chief cause of decay in the Missions, outside of the deterioration to which any structure is subject, has been

the exposure of the adobe walls to the elements. Adequately protected, sun-dried adobe bricks should have proven tolerably satisfactory in most of the situations in which they were used by the mission builders. But the falling of plaster in large patches from the outside of the walls, and above all the failure of their protecting roofs, permitting the winter storms to soften them from the top, have resulted in many of them being gradually disintegrated and literally washed away as mud into the soil.

A brief summary of the present condition of the mission buildings may not be without interest, and will at least serve to indicate the magnitude of the problem to be attacked. At San Diego there remains little but the front facade of the church, and the establishment is practically abandoned. San Luis Rey is, along with Santa Barbara, one of the two Missions still in the hands of the Franciscan order, and is still one of the most complete. Church, cloisters, and cemetery wall are tolerably intact. The many playful and wayward moldings which adorn the church facade and the cemetery wall have been painted a deep Indian red, and are thereby rendered stringy, insistent, and are deprived of all shadow value. This is a serious disfigurement, but fortunately one easy to remedy. Pala, which I have never visited, I understand to be fairly well cared for. The remains at San Juan Capistrano are, I believe, more extensive and more instructive than those at any other establishment, albeit a large portion is in a more or less ruined condition. The arcades, which are of brick construction, still stand around three sides of the large cloister; but on two sides the buildings which they faced have disappeared either wholly or in part, and the absence of roof leaves them without lateral bracing and hence in danger of overturning. I can not pass by San Juan Capistrano without a word of commendation for the sympathetic work of restoration which Father O'Sullivan is quietly but persistently carrying ahead under his personal supervision and largely with his own hands. At San Gabriel there remains only the church with sacristy and a couple of adjoining rooms, and some brick ovens and vats in the rear. The exterior of the church, one of the freshest and most varied of the mission structures, is well preserved, but the interior has been disfigured by the addition of a wholly incongruous trussed wood ceiling of sophisticated Victorian Gothic design. The old buildings have been supplemented by additional living quarters, etc., apparently dating from about the nineties of the last century, insufferably meretricious in design, inharmonious in both plan and style. At San Fernando one monastery wing and arcade are in good preservation. The walls of the other wings are almost down to the ground and no sign of their roofs remains. The church, which has been out of use and was well on the road to an early fall, has been saved structurally by the recent insertion of concrete columns and beams within the walls and the temporary patching of the roof. San Buenaventura has all disappeared save the church, which is well preserved. Santa Barbara is one of the best maintained and most completely and actively used of the Missions. It is the home of a Franciscan college of large membership. The church and one wing of the original structure are still intact. These buildings had a distinct advantage over most of the Missions in being largely, if not entirely, of stone construction. The original surfaces may still be seen on the south side of the church and the adjoining garden wall. The masonry is a good workmanlike rubble job of varied golden stones, exquisite beyond description in both color and texture. How, in the face of beauty so ravishing, could any man have committed the crime of plastering the entire front facade of both monastery and church with a

smug troweled coat of leaden gray Portland cement? Had this been applied by a present day real-estate builder we might be consoled by the assurance that the lapse of a few years would find the original surface reappearing; but it is, unfortunately, a rich mix, probably harder than the stone to which it clings. The new wings of frame construction which have been added at the rear of the original wing lack alike distinction of design and harmony with the original work. Santa Ynéz now consists of church, belfry, and one wing of the monastery; Purísima of only the latter element. I have visited neither of these Missions, but photographs and report would indicate their condition as far from satisfactory. San Luis Obispo offers the most shocking example of deliberate desecration to be found among the Missions. The church facade has been needlessly bungled, the charming loggia on piers which early drawings and photographs show extending along the facade of the monastery has been wantonly swept away, the remaining buildings have been boarded up in unsightly channel rustic, and, to add insult to injury, a stupid and ill-fitting little belfry has been added in the most inappropriate position which could have been chosen. At San Miguel the church is well preserved, with original painted wall decorations entirely intact. One wing of the monastery is in fair condition, the other wings in various stages of delapidation. Portions of the old walls, down almost to the ground level, may be traced far out into the fields now separated from the Mission by the highway and railroad. The high skeleton steel bell tower is an atrocity in extenuation of which nothing can be said. I have not visited San Antonio de Padua, but I believe the establishment is entirely deserted, and in a poor state of preservation, temporary measures only having been adopted to forestall further decay. Soledad presents but four ruined walls almost down to the ground. San Carlos at Carmel now consists solely of the church; only a few fragments of walls almost even with the ground recall the disappearance of the monastery buildings. The church is well preserved; but the restored roof is much steeper than the original one, and imposes above the original semicircular pediment of the facade a high and sharply pointed one warranted by neither the spirit nor the letter of the old design. San Juan Bautista now embraces but church and one wing of monastery, on the whole in good preservation. In last month's Architect and Engineer I called attention to the addition of the tongue and groove ceiling in the church and the belfry on the exterior, both serious disfigurements. The recent whitewashing of the facade has not improved its quality. All traces of the buildings at Santa Cruz Mission have disappeared. At San Francisco de Asis (Dolores) the church alone remains. Mission San José is but a half ruined fragment. Santa Clara, San Rafael, and San Francisco Solano are negligible in a consideration of the Missions.

This recital, which has dragged out considerably beyond my own expectation, is, as I have said, no more than a meagre skimming of a few of the obvious problems to be met. Every Mission, even the most perfectly preserved, presents a multitude of mutilations, unauthorized excrescences, and structural weaknesses whose catalogueing would be incomprehensible without detailed plans, and insufferably tedious to boot, but which must all be conscientiously dealt with in any comprehensive scheme of restoration. I have accomplished my purpose if I have only impressed the fact that the problem is a vast and complicated one. How is it to be met?

To begin with, one must choose or mediate between the several divergent views as to the nature of restoration considered as an abstract

problem. In their extreme forms there are three principal schools. First there is what might be called the sentimental school. Its adherents argue that every vital artistic manifestation is the result of intangible social and spiritual forces; that these animating forces can never be duplicated or repeated artificially; and that hence any attempt to copy or reproduce the work of a former age is foredoomed to sterility. Therefore, they conclude, the restorer's province is to retard as far as may be the process of disintegration; and to this end he may bind, brace, prop, tie, shelter, or employ any other serviceable device; but restoration, in the sense of the re-execution and replacing of previous work, is always and unqualifiedly unjustifiable. Ruskin was an exponent of this school. Secondly, there is

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SAN CARLOS MISSION, CARMEL—BEFORE RESTORATION
From a drawing by Eugene Leslie Smyth

what I would call the archaeological school. Its ideal is imaginative recreation. The restorer's problem is to master the period at issue, saturating himself in its history, its archaeology, its art, its spirit, until he is enabled to proceed from the same point of view and to the same end as did the builders before him. Perhaps the most brilliant exponent of this school, in theory and in practice alike, was the mediaevalist, Viollet-le-Duc. Lastly, there is what may be termed the practical school, which disallows any claim of the past to intrude on the present, and sees in a building to be restored only a building to be remodeled or treated as a new construction.

Were the problem but the choice of the one of these extremes which coincides with the restorer's predilections, the question of policy would be reduced to a comparatively simple matter. The difficulty arises from the fact that while each theory embraces points which are valid, no one of them is reasonably tenable in its absolute form and to the exclusion of other considerations. The problem is a compromise between conflicting

interests; and, as usually happens under such circumstances, it is often an extremely perplexing matter to decide in practice just how far the claims of each principle are warranted. What I have called the sentimental theory recognizes the uniqueness of a past heritage and the reverence and inviolability which should be its due; yet beyond a certain point it condemns a structure to a stupid and pitiful senility. The archaeological theory emphasizes the necessity of active sympathy based upon sound learning; yet it overlooks the fact that the most encyclopaedic knowledge of any past era is at best only partial, and that the most learned and inspired reconstruction is of necessity subjective. The practical theory admits that a living present has an inalienable right in any

SAN CARLOS MISSION, CARMEL—PRESENT CONDITION

existing building, but forgets that the past holds a prior lien on structures whose historical and aesthetic interest classes them really as public monuments.

Sound and sane restoration must be governed by several considerations of prime importance. In the first place, a structure without a use is an anomaly. (By use, of course, I do not necessarily imply a utilitarian purpose; many a monument is justified by its spiritual significance.) Legitimate use confers the same dignity upon a building that legitimate work confers upon a man. But continued use implies growth and change, which means that a really vital structure can not be expected to remain perpetually static. Therefore any building which is allowed to exist must be allowed to adjust itself to the requirements of its legitimate use. This, however, must be qualified by another essential consideration. A structure which historical and aesthetic interest has raised to the rank of a public monument (be its actual ownership public or private) is thereby placed in a class apart from the ordinary building, and no impairment of its distinctive qualities is admissible. The owner of a city

store or a suburban house is free to make such alterations as he desires, even to complete reconstruction or demolition. The owner of Santa Sophia or of the Farnese Palace has, morally at least, no such right, for such edifices are parts of the common heritage of mankind. From this there result two further considerations of prime importance. Admitting the necessity of restoration, no original work should be destroyed or altered save where clearly required by structural or practical reasons. Furthermore, admitting that rebuilding of old parts or addition of new ones is justified by the circumstances of the case in hand, new work should conform, certainly to the spirit, and preferably as far as possible to the letter, of the original. Restoration is not a thing to be undertaken lightly or as a matter of personal exploitation. Of all the problems which the architect encounters there is none demanding a more finely balanced judgment or greater self-effacement and humility. If one can look at a work of restoration and declare, "That looks as if it had been restored by So-and-so," then I should say that, *ipso facto* it is wrong.

What I have said so far envisages restoration as a general problem, applying with equal force to the case of a Greek temple, a Gothic church, or an Italian villa. The rehabilitation of the California Missions is complicated by still another consideration special to their own case—I mean the question of primitiveness. The Missions were erected in a wilderness by pioneers. Materials were imperfect, coarse, and largely perishable; workmanship was unskilled, generally Indian; mechanical facilities were of the most meagre: even the designers themselves were priests lacking a specifically architectural training. Under these circumstances the buildings necessarily embodied numerous inequalities, inconsistencies and crudities. Surfaces and lines are often untrue, details and profiles are coarse and fumbling, and structural deficiencies have developed ranging all the way from a picturesque scaling of stained plaster to the actual failure of piers, walls, and beams. To a certain extent some of these features are asociated in the lay mind as characteristics of the Mission architecture. What attiture is to be adopted toward them when it comes to restoration?

There can be no doubt that a great part of the charm of many of the buildings is attributable to these very accidents. Even many of the crudities of detail seem to have a subtle accord with the spirit of the large design; although this may be but a sentimental indirection for owning that the composition as a whole is generally so admirably scaled and proportioned that it holds its own even in the face of serious shortcomings of detailing. All of these accidents, however unintentional, and even where frankly imperfections, have a certain sentimental—I had almost found myself writing aesthetic—value. Needlessly to tamper with them would be sacrilege. And yet, even in the business of furthering the interests of sentiment one must endeavor to keep one's head. If these small inaccuracies and lapses of taste have a value, it is the value of genuineness and sincerity, qualities which will invariably be accorded respect by generous and unprejudiced minds, even though they may dissent from the conclusions involved. But it is equally true that to an honest and virile mind few things are more offensive than the affectation of spurious sentiments, among which must be included conscious and artificial primitivism. Deliberately to reproduce these imperfections in portions restored or extended would be an unpardonable affront alike to integrity and intelligence. We may be interested in noting that in the construction of

an arcade a faulty layout of piers has necessitated the insertion of an elliptical arch in a line of semicircular ones, and furthermore that the elliptical arch is unsymmetrically built; just as we might be interested should some delving scholar unearth the fact that at the first performance of one of Mozart's symphonies certain mistakes were made by the orchestra in the playing of the violin parts. But to build an arcade of our own consciously duplicating these discrepancies would be as unwarranted as to insist that the same errors of the violins should be introduced into subsequent repetitions of the symphony. It must be remembered that the mission builders did not use adobe and soft terra cotta because they regarded adobe as the ideal building material or softness as a virtue in terra cotta, but because no other materials were available; nor did they execute graceless profiles and bulky details because they considered such qualities desirable or because they were basking in the romance of being primitive, but because the limitations of their training and technique rendered impossible any other course. In other words, the mission builders were in every instance doing the best they were able to do; and it would be a doubtful tribute to their sincerity to emulate their shortcomings as standards of achievement. I am fully alive to the dangers of admitting this principle, for its unintelligent application by those who confound architecture with solid geometry might lead to the entire dehumanizing of these admirably human structures. But this only emphasizes the necessity for caution and well considered judgment at every stage of the work.

The suggestion has frequently been urged that mission restoration should be attacked in the spirit of a carnival of camouflage, simulating adobe where not actually employing it, and making the applied decorator play the midwife to secure the delivery of all the characteristics of antiquity before their proper time. Such dilettante dabbling, leveling serious, even sacred, things to the plane of amusement concessions at an exposition, should be too repugnant even to admit of serious discussion. Reverence for the past must be clearly distinguished from idle curiosity in relics.

This is not the place to offer a detailed program for the rehabilitation of each or any of the Missions. Every case must be considered individually and made the subject of extensive study. But as I have been dealing entirely with principles, a few practical examples may help to illustrate what I consider the proper activities for the restorers. When, in the early part of this paper, I enumerated the Missions, with general notes as to the present condition of each, I had no intention of implying that all, or any, of them should be entirely rebuilt to conform to their original plans. In many cases the data for such a reconstruction are lacking; in most of them portions of the ground originally covered have passed into other hands; and furthermore, in almost no instance would there be any real use for the rebuilt structures. I may say in passing, however, that I should welcome the publication in adequate form of a complete and authoritative archaeological and architectural record of the Missions, comprising pertinent early drawings and prints, the best obtainable photographs, drawings of their present state, and restored plans as far as the data for the making of such are obtainable. But to return to restoration in the concrete. It should in the first instance aim to correct all structural deficiencies in the existing buildings, and take effective measures to forestall further disintegration. For instance, the

arcades at San Juan Capistrano, the church at San Fernando, and the roofs at San Antonio de Padua should be put beyond any danger of collapse. In making these structural repairs only the most permanent materials should be employed, and all work should conform to the recognized standards of the best building practice; for it would be both foolish and wasteful to spend large sums of money in effecting restorations which after a comparatively short period would in their turn require restoring. Having made existing structures sound, the next step is to determine in each case what, if any, rebuilding or addition is necessary, which can only be done in the light of present and probable future practical requirements. At most of the establishments I believe that the existing

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SAN FRANCISCO DE ASIS MISSION (DOLORES) IN 1849
From an old Daguerreotype

buildings satisfy present needs. Where incongruous structures have been added, either directly to the originals, or as adjuncts, they should be replaced by buildings harmonious in plan and style. Into this class fall such elements as the living quarters at San Gabriel, the rear monastery wings and outhouses at Santa Barbara, the belfries at San Luis Obispo and San Juan Bautista, the living cottages at the rear of the latter, and the steel bell tower at San Miguel. Where elements of beauty have been unnecessarily destroyed, as in the case of the loggia at San Luis Obispo, I believe there is ample warrant for their replacement. Certain previous restorations which are out of harmony with the former work should be brought into conformity with the original spirit. This would apply to such cases as the ceiling at San Gabriel and the roof at Carmel. Some of the problems of this class present special difficulties, as for instance the cement plaster on the facade of Santa Barbara, which it is probably impossible to remove, but which might be mitigated to some extent by

some such process as heavy sandblasting unevenly applied, followed by a coat of cold water paint of a tawny color similar to the original stone adjoining. The buildings which are abandoned present problems varying with the degree of dilapidation, but I believe that all structures should be preserved which it is at all practicable to save. In the case of a fragment like Soledad, which is beyond the field of reasonable reconstruction, the site might be dedicated as a memorial park. The same is true of the site of Santa Cruz. The facade of San Diego, being a relic of the mother Mission, at the site of the first permanent settlement in California, possesses special historical and sentimental interest, and should be preserved in some appropriate way as a monument. The extent and interest of the

SAN FRANCISCO DE ASIS MISSION (DOLORES)—PRESENT CONDITION

remains at San Juan Capistrano place it in a rather unique position among the Missions. Here is the most complete tangible, first-hand evidence extant as to the nature and scope of the original establishments. For this reason, always preserving a due regard for the needs of its daily life and for its sacred purpose, it should be treated as a sort of living memorial, not a museum specimen, but a complete organism granted by some miracle of fortune a continuance of life beyond its normal day. The ruins of the old vaulted stone church, perhaps the most ambitious of the efforts of the mission builders, should be merely braced and tied as a precaution against further disintegration, and allowed to remain as they have stood since the earthquake which sent them toppling on the heads of the worshippers over a century ago. But at the rear the cloister wings should be reconstructed as far as possible, perhaps even beyond the actual needs of the present establishment, rounding out the most complete picture which remains today of a Franciscan Mission in the days of its full prosperity.

I have already written at considerable length without touching upon any aspect of the question but the architectural. Two other phases of the problem remain, which must be successfully handled as requisites to any sound accomplishment in the architectural field—I mean the financial and the administrative. These are matters whose solution properly devolves upon experts in their respective lines; yet I do not wish to close without at least suggesting certain considerations which will more or less directly affect the architectural problems of restoration and maintenance.

The task of raising the requisite money has been assumed by a representative committee which, acting through all available local organizations throughout the State, will inaugurate its campaign this month. The funds necessary for the most modest program of rehabilitation will mount to a very large sum. For a really adequate handling of the problem the committee's estimate of from one to three million dollars probably does not err by exaggeration. Of the possibility of raising this through the avenues of public appeal the committee seems sanguine. Personally I would have been less confident of accomplishing so large a task without some form of State aid. But here, of course, a legal difficulty raises its head—the title to the Missions is in the Catholic Church, and public funds can not be expended on private property—at least not if the public is aware of it. Yet for all that, the Missions really constitute a part of the common heritage of the people of the State, and it is to their interest to see to it that they are adequately maintained and suffer no mistreatment. The State might possibly acquire the title to the property, and assign or lease it to the Church in the same fashion as the Board of State Harbor Commissioners in San Francisco assigns State-owned wharf facilities to individual shippers. I am well aware of both the practical and sentimental objections to such a policy, as well as the possibilities it opens up for abuses. I am not urging that it is practicable or even desirable; I merely suggest it is a not inconceivable method of meeting a difficulty. Possibly the committee will demonstrate that its energies and resourcefulness have rendered the difficulty illusory.

Equally important with the collecting of funds is their wise and efficient administration. There should be some competent, disinterested body charged with the decision of all matters of policy. This body should represent the public as virtual possessors of the historical and sentimental interests in the Missions, the Church as trustee and user, and the architectural profession as the party best qualified to determine how the actual work should be carried out. It should apportion money to the several establishments in proportion to their carefully ascertained needs, appoint architects to study and execute the work, and exercise powers of approval and general supervision over work projected and in execution. A wise selection of architects is one of the most vital of the matters involved, for on it depends, in the last analysis, the success or the failure of each project.

It should also be remembered that the accomplishment of the proposed program of restoration does not conclude the matter nor end the public's interest in the Mission question. There remains the permanent maintenance of the buildings. I have not hesitated to iterate that the Missions are, morally at least, public monuments, a part of the common heritage of the people of California. It is to their interest that none of those qualities which constitute the Missions' distinction should be impaired, and some plan should be devised for reasonably safeguarding that interest. At the present time the essential value of any one of the buildings may be blasted beyond recall through the lack of knowledge or

sympathy of any resident priest. The fact that most of the priests have in recent years been alive to the importance of their charges does not obviate the existence of the danger. There should be some permanent authority empowered to supervise the maintenance of the Mission buildings, and to approve or veto any proposed change, regardless of its nature or extent. The most obvious, but not therefore necessarily the best, solution of this problem is some form of State supervision; in fact, unless a vigilant guard were exercised against incompetent, unintelligent, or corrupt political control, it might readily prove more disastrous than honest neglect. This function of supervision might be exercised by a continuation and extension of the body created to handle the immediate problem of restoration. Perhaps it should fall to the lot of the Church. But at any rate it is important that the interests of the public in the Missions as monuments be recognized and protected.

In conclusion I would point to the importance of the sentiment now being aroused in favor of our landmarks, and I would urge that it be not directed to the Missions alone. Although they are the most numerous and the most important monuments before us, they are by no means the only ones deserving attention. There are many minor but none the less delightful houses of the Spanish period, to some of which also attach varying degrees of historical importance—buildings like the old houses still gracing San Juan and Monterey—which should be included in a really comprehensive progrom of restoration.

## NOTES ON THE ILLUSTRATIONS

The photograph of the interior of the church at San Fernando, used as frontispiece, repeals the dilapidated condition into which some of the Missions have fallen and toward which most of them have been tending.

The remaining illustrations show by "before and after" parallels the results of three examples of unwarranted treatment of the Missions.

The drawing of San Luis Obispo in its original state is by Eugene Leslie Smyth, reproduced from "The Missions of California," by Eugene Leslie Smyth (Chicago, Alexander Belford & Co., 1899). The photograph opposite, showing the Mission as it stands today, is inadequate for suggesting the thoroughness of the desecration. I have been unable to obtain a photograph showing the present aspect of the wing from which the loggia was removed. It is apparently too uninteresting even to attract the local makers of post cards.

The drawing of San Carlos, Carmel before restoration, is also by Eugene Leslie Smyth, from the book cited above. The photograph opposite shows the result of the added roof on the mass of the building and in particular on the facade.

The pair illustrating San Francisco de Asis (Dolores) is an interesting revelation of the result of unintelligent architectural tampering. Every person with a feeling for architecture must have been puzzled by the design as it stands today—heavy columns serving, as it were, a meaningless platter of a cornice which divides the facade horizontally into almost equal halves. The old daguerreotype, photographed by Turrill and Miller, and reproduced in "The Beginnings of San Francisco," by Zoeth Skinner Eldredge (San Francisco, Zoeth S. Eldredge, 1912) explains the situation at a glance. This plate was originally the floor for a high wooden balcony rail, the elimination of which has destroyed the relation of the parts of the facade among themselves, left the scale of the supporting columns incomprehensible, and reduced a design of native charm and vivacity to a state of stolid stupidity.

# House for E. J. McCutchen, Esq., Los Altos, California

THE illustrations presented herewith show the house of Mr. E. J. McCutchen, at Los Altos, California. The house lies in the center of a picturesque sixteen-acre estate situated in the rolling hill country of the San Francisco peninsula, back of Palo Alto and Mayfield. Mr. John Hudson Thomas, of Berkeley, California, was the architect, while Messrs. MacRorie & McLaren, landscape engineers, of San Francisco, were in charge of the landscape work.

VIEW IN GROUNDS, HOUSE FOR E. J. McCUTCHEN, ESQ., LOS ALTOS, CALIFORNIA
John Hudson Thomas, Architect

The house is planned as a short-stemmed Y, of which the two arms are occupied by living room and dining room, respectively, with reception hall between, and the stem by service accommodations. The space embraced between the arms of the Y is developed into an open entrance court, paved with brick. The wall surfaces are plastered. The high roof, whose lines are softened by the snubbing of gable points, is shingled, and treated with rolled eaves simulating thatch. The interior of the lower story is finished in white cedar, with oak floors.

The plan is one obviously developed for, and well adapted to, an open site on flat or gently sloping ground. In treatment the design hearkens back to precedents of English country houses, but it has been somewhat formal-

ized, and breathes an aroma of the German and Austrian secessionists. It is handled not without adequate consistency, save for the falsely classical note of the pergolas. In general the building accommodates itself comfortably to the land. The most effective views are those in which the length is displayed to the fullest advantage, for then the composition is most quiet and restful. As the ends are approached, a more or less conscious hankering after picturesqueness intrudes an element of unrest. The parts are, in fact, overmultiplied. In certain successions of gables, decreasing one below the other,

VIEW IN GARDEN, HOUSE FOR E. J. McCUTCHEN, ESQ., LOS ALTOS, CALIFORNIA
John Hudson Thomas, Architect

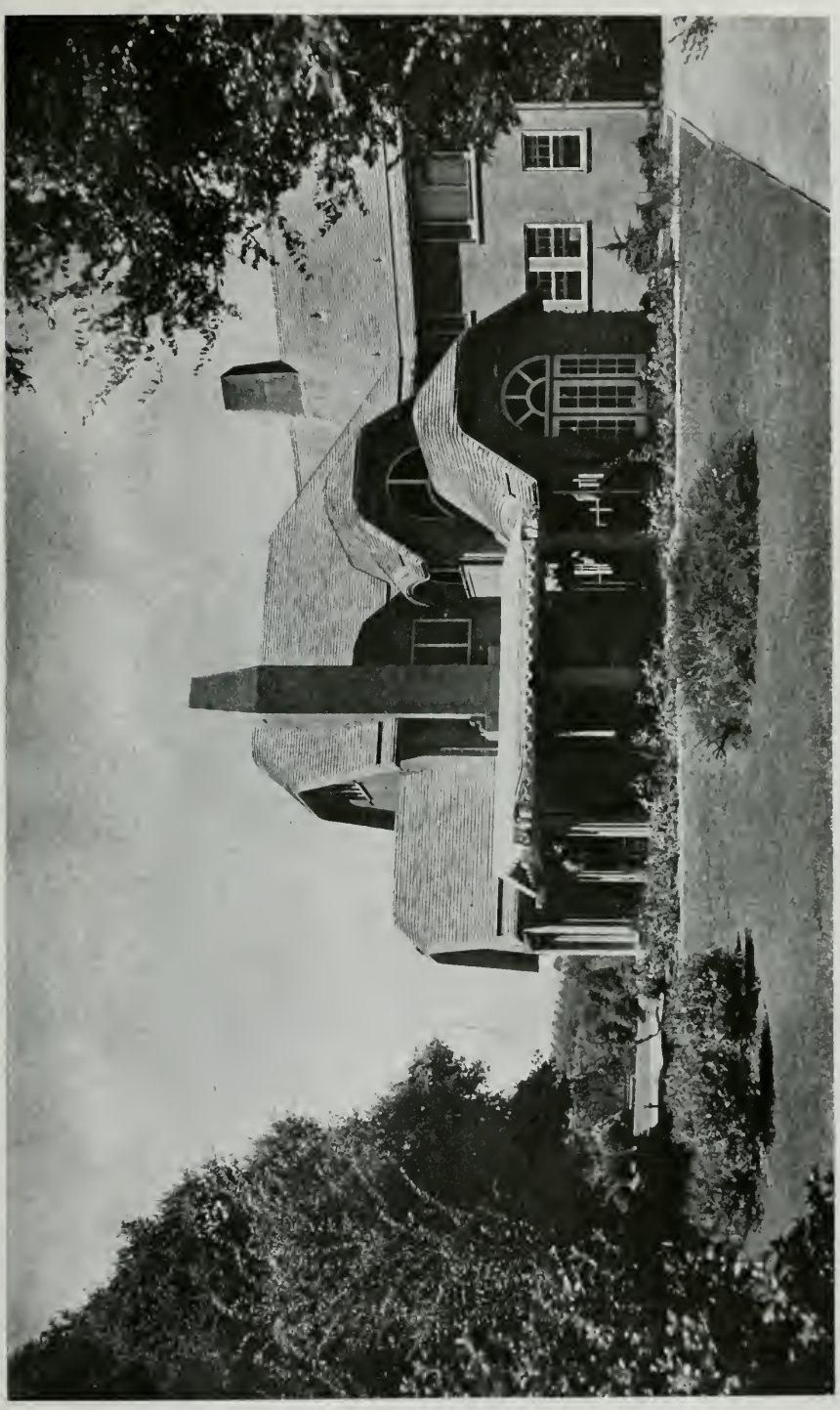
the rear ones have a not unjustified air of dissatisfaction with their congested positions.

The interior is simple, but not entirely graceful. Across the end of the dining room bay the heavy plaster arch, deprived of support from below and winding up its ribbon of ornament at the point of severance, seems literally to have accomplished the proverbially difficult feat of lifting itself by its own boot-straps. The furnishing seems rich but quiet.

The grounds have been naturalistically handled, preserving the spaciousness of the original landscape, without foregoing the touches of intimacy and seclusion which are required to lend charm to a dwelling place.

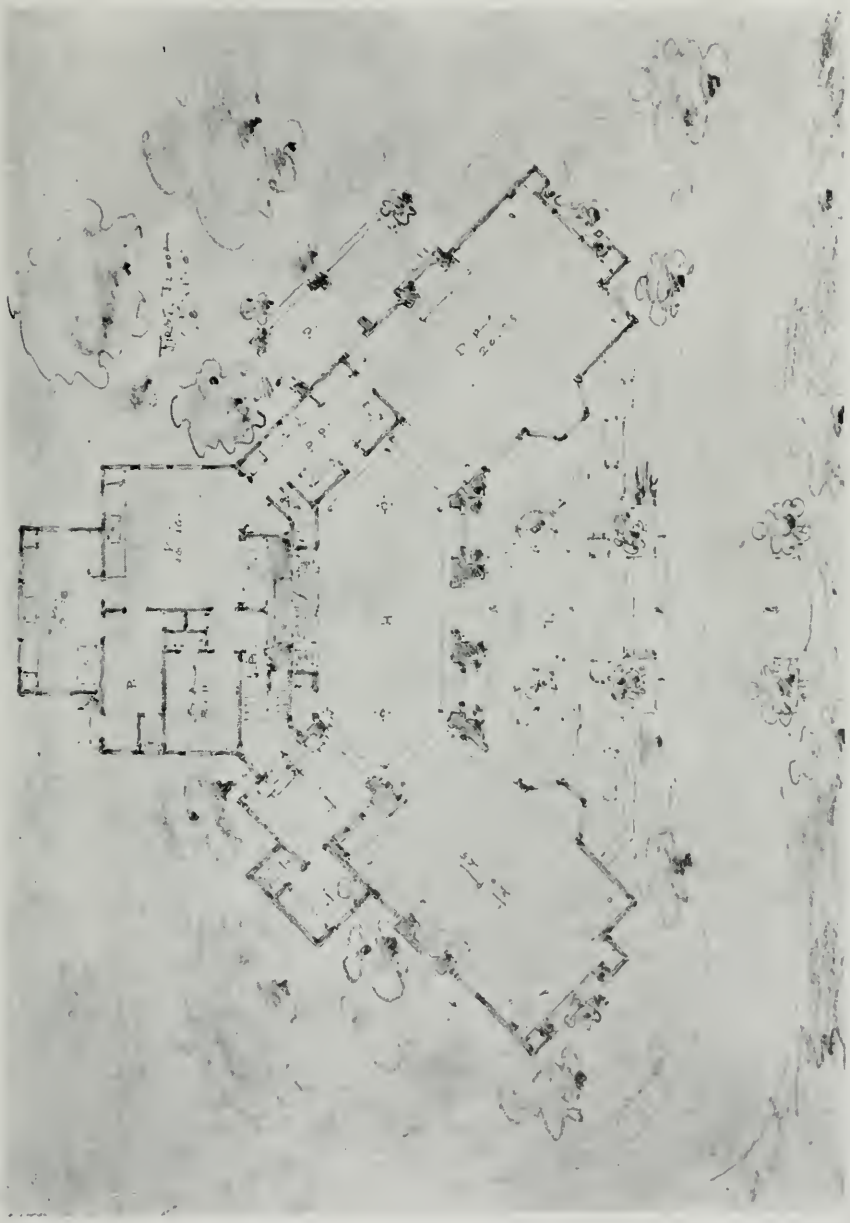
I. F. M.

GENERAL VIEW, HOUSE FOR E. J. MCCUTCHEN, ESQ., LOS ALTOS, CALIFORNIA
JOHN HUDSON THOMAS, ARCHITECT



CORNER HOUSE FOR E. J. McCUTCHEN ESQ., LOS ALTOS, CALIFORNIA
JOHN HUDSON THOMAS, ARCHITECT

DINING ROOM, HOUSE FOR E. L. MCCUTCHEN, ESQ., LOS ALTOS, CALIFORNIA
JOHN HUDSON THOMAS, ARCHITECT



PLAN, HOUSE FOR E. I. McCUTCHEN, ESQ., LOS ALTOS, CALIFORNIA. JOHN HUDSON THOMAS, ARCHITECT

# Integrating the Architectural Profession

IT has not been lost on engineers that architects have had marked success in organizing for their own welfare and the service of the public. The Engineering News-Record gives considerable space to an analysis of the situation with reference to the profession of engineering, stating that architects have (in the American Institute) a code of ethics "with teeth;" they have standardized, and secured general adoption of, a procedure for architectural competitions; they have had a large degree of recognition in the formulation of public building policies and in the drafting of building codes, and they have put through in many states laws covering the practice of their profession. Because their organizations have been so effective, a new organization step they are taking is of special interest. This paper explains:

There has just been formed in New York State—leading members of the American Institute of Architects taking an active part therein—the New York State Association of Architects, a body which aims to include the entire profession in the state and which will devote its energies to improving the status of the architect. It will admit to its ranks not merely the architect in independent practice and the employed architect, but draftsmen as well. There is to be no breaking up into classes. When the interests of the whole profession are at stake, all are to work together, employer and employed.

In engineering lines we have a somewhat similar movement—the American Association of Engineers—but with this very important difference, that it was not started, nor is it now supported, by the leaders of the profession. The latter, through the founder societies, are supporters of Engineering Council.

But, comparing the new movement with either the American Association of Engineers or Engineering Council, there is another distinct point of difference. The purpose of the association is to be broadly construed. It is to look after legislation for the interests of the profession—and to that end large membership will be of material help; it is to undertake "welfare" work, and, strange as it may sound to engineering ears, accustomed now to the advocacy of the separation of technical from civic and welfare activities, it is to undertake technical work. There are two reasons for the inclusion of the technical: To assist in the education of those who are not members of or eligible to membership in the institute, and to help the architects in the smaller communities in the solution of their problems.

Curious it will sound to engineers, too, to learn that the Institute is not affrighted by the new organization, but actually is encouraging the formation of similar associations in other states. It goes even farther: it asks that delegates from such state organizations be sent to the Institute's conventions —with the evident purpose of co-ordination and co-operation. With members of the Institute as leaders in the state associations, that body will be the federating agency for all architectural activity.

Plunged deeply just now in the problem of professional reorganization, engineers may well draw inspiration from the breadth of vision displayed by the architects. When the conference committee of the development committees reports, we are sure to have before us a plan for the integration of the engineering profession. In that time may we have the vision of the architects, that, seeing the great purposes of the plan—assuming that it is adequate—we may brush aside minor difficulties and quickly put it into effect!

# Winners of $5,000 Hollow Tile House Competition

THE architectural competition for a one-story hollow tile house to cost not more than $5,000, recently conducted by the Los Angeles Pressed Brick Company, in accordance with a program indorsed by the Southern California Chapter, American Institute of Architects, was a success, although the number of competitors was not as large as anticipated, and the designs, while good, were not unusual. The small number of participants is accounted for by the fact that draftsmen were never so much in demand as now, and, being busy, there was very little time for them to work on the competition. Twenty-four designs were submitted. The jury comprised Messrs. J. C. Austin, D. C. Allison, and Garrett Van Pelt, Jr. The awards were as follows:

First prize, $300 cash: Mr. Paul R. Williams, 1110 Story Bldg., Los Angeles, Cal.

Second prize, $150 cash: Mr. John Frederic Murphy, 1206 State St., Santa Barbara, California.

Third prize, $100 cash: Mr. Donald R. Wilkinson, 136 East Avenue 45, Los Angeles, Cal.

Fourth prize, $50 cash: Mr. M. Sabransky, 429 Story Bldg., Los Angeles, Cal.

First honorory mention: Mr. Joe N. Estep, 1110 Story Bldg., Los Angeles, Cal.

Second honorary mention: Mr. Marcus Shipsman, 1157 No. Alexandria Ave., Los Angeles, Cal.

Third honorary mention: Mr. Ernest Irving Freese, 701 Laughlin Bldg., Los Angeles, Cal.

Fourth honorary mention: Mr. Joe Weston, 6783 Hawthorne Ave., Los Angeles, California.

Mr. Howard Frost, president of the Los Angeles Pressed Brick Company, states he was induced to hold a hollow tile house competition because of the growing demand for a moderate priced house built of this material. According to Mr. Frost, Los Angeles building permits for the year 1919 approximated twenty-eight million dollars. With the building costs averaging close to twice what they were four and five years ago, or a matter of say fourteen million dollars, as compared with pre-war value, the demand for hollow tile has been more than double what it was in 1912 and 1913. This has not been due to large mercantile buildings, as exceptionally few have been built since the armistice, nor has it been due so very largely to Government business, though the volume of that is still good, but rather to residence construction, small houses for ranches, industrial requirements, etc.

The price of lumber has advanced far more proportionately than hollow tile, and this is the main reason why the demand for hollow tile is so great. The present difference between cost of frame and hollow tile construction is not to exceed 5%, and when the many advantages in favor of hollow tile are considered, there is small reason to wonder at the great demand for a less expensive type of homes.

Following is the report of the jury:

At the time appointed in prospectus there were twenty-four packages delivered, of which twenty-one conformed to the rules issued for the guidance of the contestants; and three were not considered, for the following reasons: Two of them were not delivered flat; and one of them had marks that could be construed as "an identifying mark"; this set was also "rolled" instead of being "flat." Rules are made to be followed.

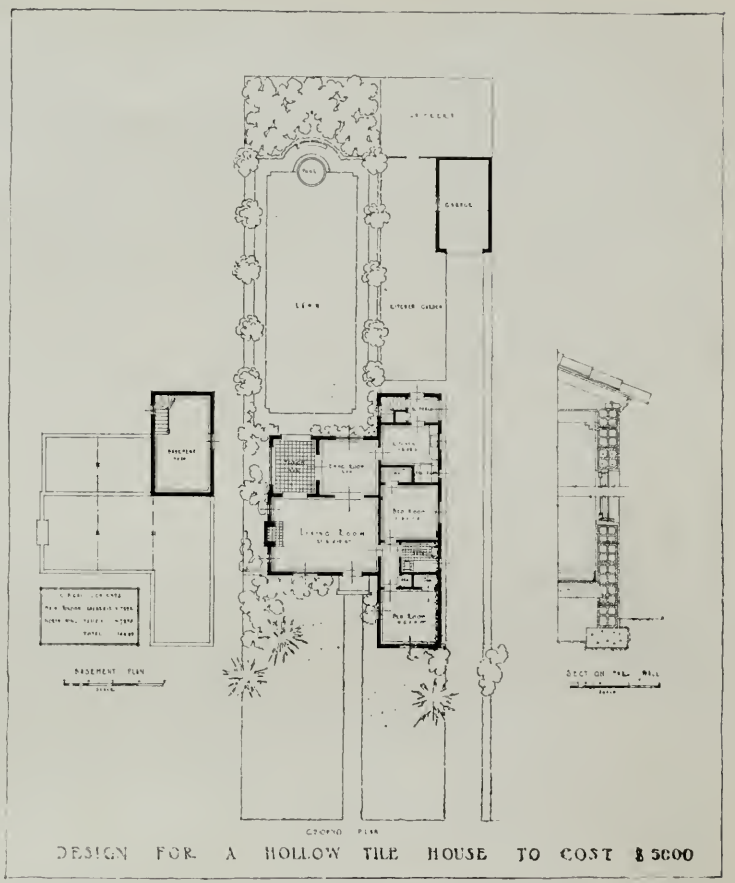
The drawings that were submitted (with few exceptions) are unusually good; and the judging committee had several meetings and long discussions before it was possible to arrive at a final decision.

The competition called for a house that could be built with hollow clay tile; and the evident intention was to obtain designs that would show how "burned clay products" could be used in the construction of a home of moderate cost.

Most of the designs submitted were of the Spanish Colonial type, which without doubt blends with the "semi-tropic" climate, plant growth and landscape of Southern California better than any other.

DESIGN FOR A ONE-STORY HOLLOW TILE HOUSE TO COST $5000.

AWARDED FIRST PRIZE PAUL R. WILLIAMS, DESIGNER



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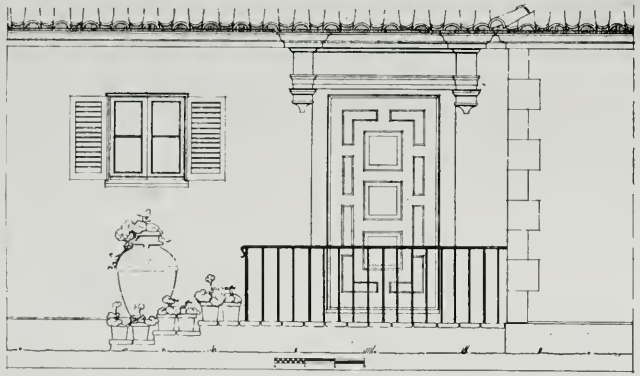

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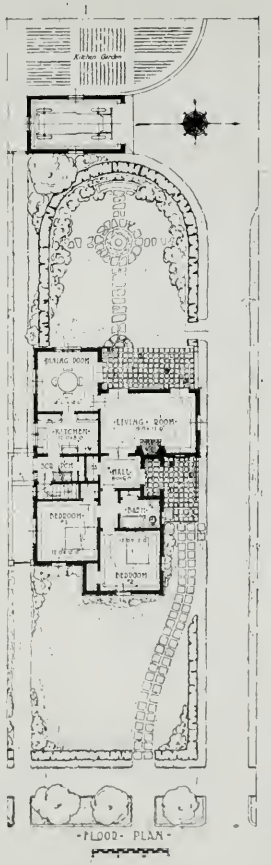
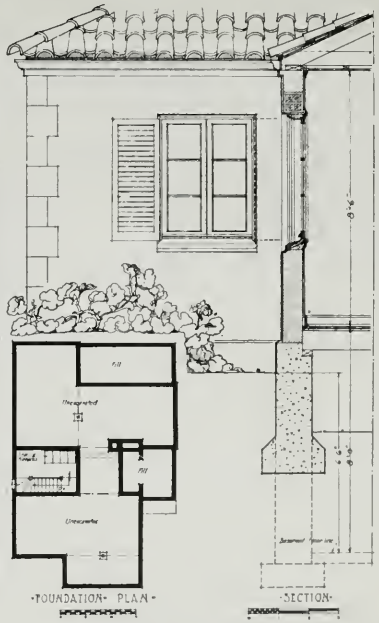
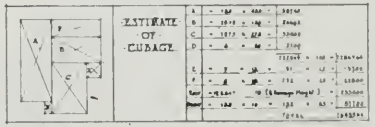
AWARDED SECOND PRIZE — JOHN FREDERIC MURPHY, DESIGNER

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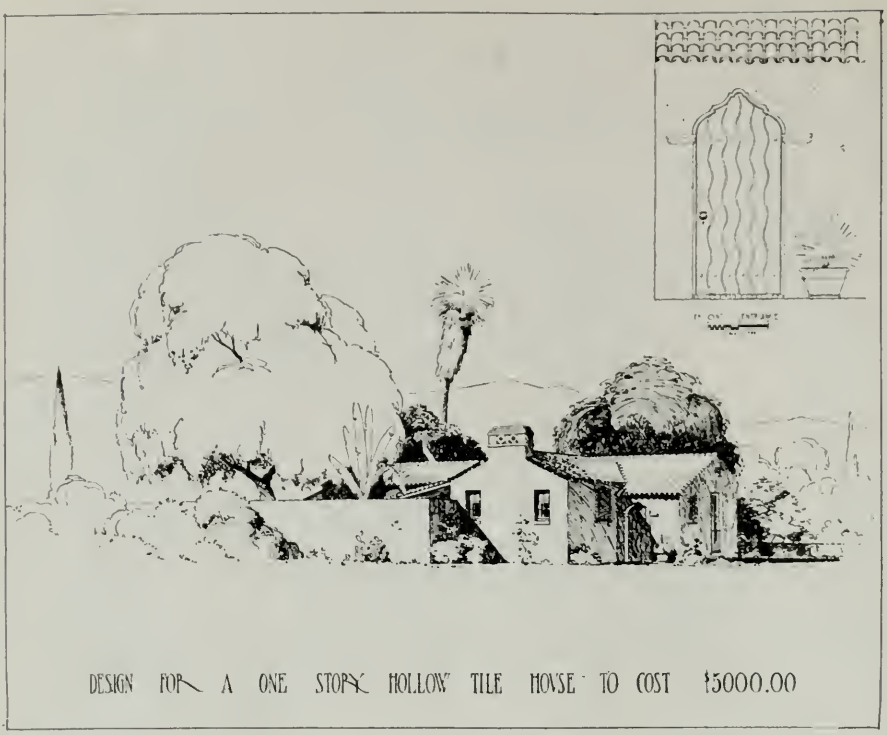


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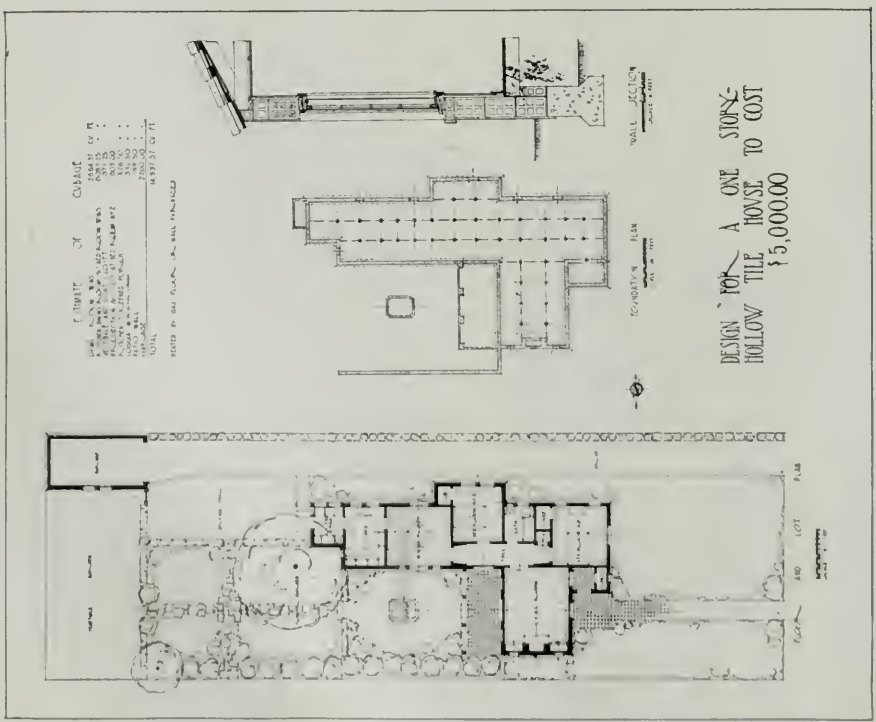
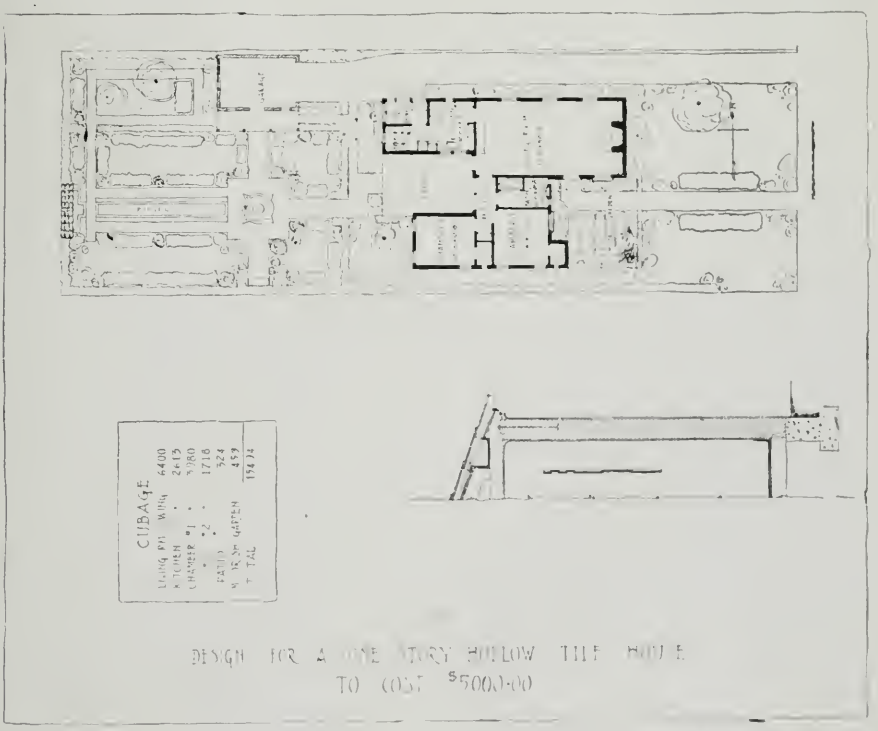



AWARDED THIRD PRIZE — DONALD R. WILKINSON, DESIGNER

DESIGN FOR A ONE STORY HOLLOW TILE HOUSE
TO COST $5000.00

AWARDED FOURTH PRIZE — M. SABRANSKY, DESIGNER




DESIGN FOR A ONE STORY HOLLOW TILE HOUSE
TO COST $5000.00

AWARDED FOURTH PRIZE — M. SABRANSKY, DESIGNER

It is evident that to build a hollow clay tile house economically that broad wall surfaces must be used, and that the outline of the house must be as free from "reveals" and "breaks" as possible.

Ease of construction, simplicity and economy of space, sunshine in rooms, relation of house with garden, and architectural harmony with Southern California conditions, were the chief items taken into consideration by the judging committee; and awards were made as follows:

**First Prize.**—Drawing was submitted by Mr. Paul R. Williams, 1110 Story building, Los Angeles.

The plan is a very simple one and very compact. The rooms are well lighted, excepting the middle bedroom, which can only obtain light from the north, and this item nearly placed the design in another place; but there were so many other good features that it was finally decided that the good outweighed the bad. The treatment of the exterior is in good taste; there are no useless ornaments or expensive fads.

The drawings were well and carefully made, and the entire scheme seemed to be well "thought out." This drawing was marked "13" when submitted, so there is nothing in the old superstition as far as Mr. Williams is concerned.

**Second Prize.**—Drawing was submitted by Mr. John F. Murphy, 1206 State street, Santa Barbara.

This plan is the most unique submitted. Every room has light from two sides. The living room is well lighted; and if the back garden is "kept up" it is delightfully placed. The kitchen is not well placed with relation to driveway. The hall and corridor space is more wasteful than in design placed "first." The exterior is very pleasing, and in the opinion of the committee would look much better when built than it does on paper. This building is adapted to a corner lot.

**Third Prize.**—Drawing was submitted by Mr. D. R. Wilkinson, 136 East avenue 45, Los Angeles.

Very similar to No. 1; more loss in hallways; dining room not so well placed; and the garden wall could be dispensed with, and possibly improve the scheme. Exterior very good.

**Fourth Prize.**—Drawing was submitted by Mr. M. Sabransky, 429 Story building, Los Angeles.

It differs from all the other prize-winning designs, and has solved the problem in a different manner. The dining room has been omitted, and the living room enlarged to make up for the deficiency. The lighting is good in this room; but strange to say there are no windows giving a view of the street, unless the wall that encloses a small portion of the front garden is removed. The width of the house makes it necessary for the bedrooms on the east-to-south to be too near the south lot line.

**First Mention.**—Drawing was submitted by Mr. Joe N. Estep, 1110 Story building, Los Angeles.

There are many good points in this scheme but there is more hall than necessary; the living room is very much "shut in"; and the wall enclosing a small patch of front garden hardly seems necessary. The design is rather restless owing to the number of roof levels.

**Second Mention.**—Drawing was submitted by Mr. Marcus Shipsman, 1157 North Alexandria avenue, Los Angeles.

Too much "hall"; patio very much shut in if there are buildings on adjoining lots; and bedroom portion of house very remote from living quarters.

**Third Mention.**—Drawing was submitted by Mr. Ernest Irving Freese, 701 Laughlin building, Los Angeles.

The "L"-shaped hall prevented this from being a prize winner. The wall in front, unlike the other plans submitted, has a reason, as it encloses a kitchen yard, and if the drive had been placed on the opposite side of the building the plan would have been improved; walls are very much broken up.

**Fourth Mention.**—Drawing was submitted by Mr. Joe Weston, 6783 Hawthorne avenue, Los Angeles.

There has been a tremendous amount of work done on this scheme; and the committee regretted that it could not give it a higher place, but it has excessive corridor spaces, the garden is out of scale with the house, and too much time has been devoted to "vistas" to the detriment of the living quarters.

Respectfully submitted by committee,

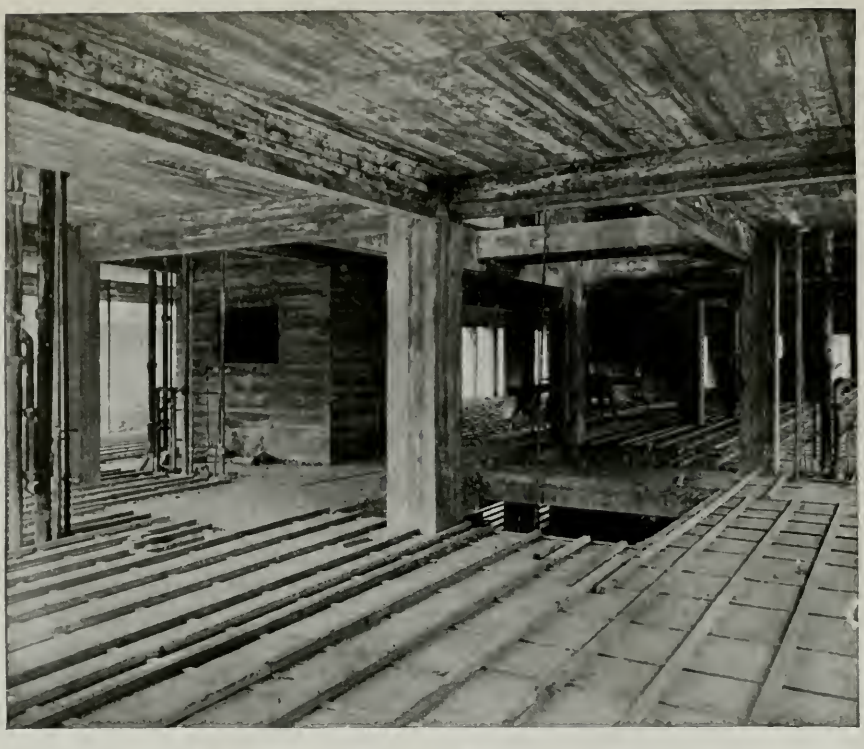
JOHN C. AUSTIN, Chairman.
D. C. ALLISON,
GARRETT VAN PELT, JR.

CONSTRUCTION VIEW OF THE BUENA TERRACE APARTMENT HOTEL, CHICAGO
Illustrating Some of the Fundamentals Described by Mr. Schlacks

# Uniformity of Structural Features in Concrete Apartment Buildings

MR. HENRY J. SCHLACKS, a Chicago architect, makes the following observations on the design for Reinforced Concrete Apartment Buildings in the October-November number of Concrete in Architecture and Enginering: In most cases there is the possibility of simple repetition of the unit—the same plan for each apartment—so that the structural divisions can be standardized. The same argument applies to hotel planning, which is practically the apartment hotel on simpler lines.

The architect and engineer should combine their efforts upon completion of the preliminary sketches. In hardly any case do the plans require anything which may not be harmonized to structural simplification. Only for elevator and stair framing need the standard of panels be varied. Columns should be the same size from basement to attic, and while it is true that this takes more concrete, the resulting saving in labor more than offsets the cost of the extra concrete. Imagine, for example, in addition to the saving in changes in form sizes for girders, columns and other members, the saving of endless calculations to maintain room sizes, pipe risers, and other necessary features, all of which are obviated when the fixed structural points are constant. Three forms of floor are in general use: Flat slab, tile in concrete joist, and open form. The last is no doubt winning preference as it develops opportunity for ingenious form centering, tending to make it of lower cost by comparison with other types. The open form reduces weight and hence price, other things being equal. Probably the day is not far distant when we will have the fabricated column, in sections 2 or 3 feet high, delivered at



CONSTRUCTION VIEW, SHOWING CONCRETE ENCLOSED ELEVATOR SHAFT, IN BUENA TERRACE APARTMENT HOTEL, CHICAGO

the building, thus simplifying form construction and presenting considerable saving of time and form supports, because such columns would be able at once to take the load and save the time which form supports must now be left in place.

As the apartment hotel type of building becomes more and more a factor in the building world, there is certain to develop co-operation among the producers who specialize in it. Certain established standards of sizes are bound to prevail—for example, one size of windows except for bath-rooms, a standard size for doors, all of which will make for much less confusion in the innumerable accessories related to such features. In the case of windows, imagine the effect of one size instead of five on the location of perhaps 1,000 which must be provided, each involving glass, sills, weights, frame, sash, trim, shades, screens, awnings, etc. The same is true of structural members and goes to show that one common size for common members will effect considerable saving of time, labor, and material, as well as reduce confusion in construction details in many parts of the building.

My motto with reference to the structural design of this type of building is to change everything, if you will, but the uniformity of columns, girders, and panel sizes. For girders maintain a standard width and depth and make the changes in the amount of steel. Only after much experience can one realize the saving thus effected. For girder depths regulate the height of partitions and change in grounds.

This is an architect's observation of concrete construction as applied to this type of building and while it seems to treat rather of the architectural

elements of such a building, my purpose is to bring out the indisputable fact that the entire concrete problem is an engineering one, that the engineer must design and assume responsibility for the integrity of the structural design, and as the above is a fact, the plan of the building must be an outgrowth of the requirements of the engineering design, based upon the merging of modern building architecture and engineering.

* * *

## Architect Talks on Advertising and Fees

AN interesting meeting of the Idaho Architectural Association was held recently at which was discussed some of the more perplexing problems confronting the architect today. There were twenty-five architects in attendance and the meeting was presided over by Mr. Burton E. Morse of Twin Falls, state chairman of the national post-war committee on architectural practice.

Prominent among the speakers at the convention was Mr. Charles H. Whitaker, member of the post-war committee, who explained the purposes of the post-war committee. He outlined the guilds of the old days, wherein the workman was apprenticed for so many years before he was permitted to work for himself and said if architects would take more care of their apprentices today and the apprentice could be made to realize the amount of valuable information he was learning, it would be better for the profession, as these apprentices will be the architects of tomorrow.

In his exhaustive address Mr. Fred F. Wilson of Bozeman, Mont., touched particularly upon two important phases of the architect's work—advertising and fees. He mentioned the fact that in so many public write-ups of buildings everyone else was mentioned except the architect, which was far from fair, and he outlined ways in which the architect should advertise, particularly in his education of the public. In this connection he cited the instance of a school board in one of the Montana counties which sent specifications to 14 architects for a building to cost $27,000, which included accessories which could not be included under $37,000. Mr. Wilson said he so stated to the board as did others, but an outside man made a bid of $27,000 and was given the contract and later the board was obliged to pay $43,000 for the building. This was a case where the public should have been educated to knowing what things actually cost and to having faith in home architects

Another thing which works a great hardship on architects is getting a uniform commission on the cost of the building, whether it be large or small, and nothing for preliminary sketches. He cited the instance of plans for a $15,000 house on which he made so many sketches to suit the wife of the family that it took $600 worth of his time before the building was commenced. With a 6 per cent commission it was easy to see how much ahead he was, he said.

Mr. Paul Davis of the department of law enforcement outlined the state's registration laws and showed the Idaho laws relating to the licensing of architects was almost a model law, that the result of this law will be to protect the public and raise the standard of the profession.

Mr. Davis suggested that a bill be introduced into the next legislature, defining just who can and who cannot practice architecture in Idaho. As an illustration of the need of this he mentioned the fact that certain lumber companies had plans drawn for houses with a careful estimate of the lumber needed and the company threw in the plans if the lumber was purchased. The new definition would determine whether these plans could be used or not. He also mentioned the recent ruling of the attorney general on several architectural points.

HOUSE OF MR. FRANK MARTEN, SAN JOSE
Warren Skillings, Architect

HOUSE OF MRS. LAWRENCE HAVEN, SAN JOSE
Warren Skillings, Architect

PANEL OF FRIENDSHIP, IN UNIVERSITY CLUB, NEW YORK
Charles Keck, Sculptor McKim, Mead & White, Architects

## Unique American Educational Work in Italy to be Circulated Here

NOW that attention is again directed to Italy it will be of interest to Americans to read the story of an outpost of American culture in the Eternal City. The American Academy in Rome has just closed an exhibition at the Century Club of the work of its graduates — architects, painters, sculptors. These men are leaders in American practice and talent in their respective fields; the American Academy in Rome has placed its stamp upon them giving them the weapons with which careers are carved, knowledge and technical training in constant association with the workmanship and prowess of Renaissance Rome as well as the ancient city of the Caesars. They have thus been able to make contact with the channels of thought that guided the artistic output of an age the emulation of which is at once our joy and our despair.

The exhibition in question contains examples of the work of the architects: John Russell Pope, Lucien Smith, H. Van Buren Magonigle, Edgar

I. Williams, William S. Koyle, Alfred Githens; the sculptors: H. A. MacNeil, Charles Keck, Paul Manship, John Gregory, Albin Polasek, Sherry Fry; the painters: F. Tolles Chamberlin, Eugene Savage, Barry Faulkner, Ezra Winter, F. P. Fairbanks, Charles Stickroth, all of whom owe a debt of gratitude for a golden opportunity to the foresight of the founders of the Academy and to the energy and educational policy of its present administrators.

The American Academy in Rome is an established institution with a history beginning in 1894, over a quarter century of yeoman work and unbroken faith so that the best traditions of the arts might prosper on our own soil. It was in the fertile brain of that most distinguished ornament of American architecture, Charles F. McKim, that the idea of such an Academy was born; under his fervor and enthusiasm, together with that of Daniel Burnham, it took shape; to their unswerving devotion to this idea, their gifts to it of money and time; to their inspiring example; to the years of Frank Millet's unselfish service; and to the adherence of such others as La Farge and Saint-Gaudens, now gone, Mowbray, French and Blashfield, happily still active among us, that the seed came to its present fine fruition.

In Rome the American Academy occupies the finest site in the city. Its buildings stand upon the summit of Mount Janiculum, the highest point within the walls. Near its gates lies the ground over which Garibaldi fought in 1849; in one of its buildings he made his headquarters for the last time and the siege left it in ruins. From the Academy windows and terraces one sees the dome of Saint Peters, mother church of them all, and all Rome lies stretched out beneath.

Mr. C. Grant La Farge, Secretary of the Academy, who is devoted to the principles which have been its guide for twenty-five years, writes enthusiastically of its great work. He says: "The American Academy in Rome offers opportunities for architects, painters and sculptors in its School of Fine Arts, and for archaeologists, historians and students of literature in its School of Classical Studies. The latter was founded in 1895 and a union between the two institutions was effected in 1912.

"Although its two co-ordinate branches are called 'Schools,' they are not schools in any commonly accepted sense. The Academy is not for teaching rudiments, it does not have classes, nor does it even impose a very rigid prescribed course. Its beneficiaries are those who have advanced far beyond the preliminary stages in their various callings. They come to Rome for enlargement and fuller development of their knowledge and talents through first hand contact with the records of the past. What the Academy offers—its Prize of Rome—is not meant to be benevolent assistance to worthy youth, but the means whereby the best material discoverable may be raised to its highest powers for the elevation of American art and letters."

The Academy sends out Fellows annually and offers in addition the privilege of its facilities to the fellowship holders sent out from fifteen American universities and other educational institutions. Fellows are chosen in competitions held throughout America.

The American Academy in Rome is a national institution and it is erected upon the underlying conception of the value of and need for collaborative work among artists. Its students come from all parts of the United States, and they are thrown together in working out their problems: "not Fellowships only, but Fellowships truly." It is most enlightening to note that the Board of Trustees of the Academy is composed of representatives of the provinces of architecture, sculpture, painting, archaeology, literature, and history; it is furthermore stipulated that three-fifths

of the Trustees must at all times be professionally engaged in their respective types of work and that the three major fine arts must always be represented by no less than two-thirds of the professional members of the Board. Devoted experts thus control the destiny of the American Academy in Rome.

The exhibition just closed is an index of the Academy's success and usefulness and a sustained test of its policy of educational work. The entire collection of drawings, paintings, photographs, reliefs, figures, etc., are to be sent on tour throughout the country as one of its regular traveling exhibitions, by the American Federation of Arts.

* * *

## Why an Architect for Schools?

Southwest Builder and Contractor of Los Angeles agrees with the Architect and Engineer that Mr. Francis Reid, a Sacramento certified architect, makes some very extraordinary statements when he declares that there is too much "bunk" about the labor and difficulty of designing school buildings.

If the designing of schools is such a very simple matter as Mr. Reid describes it to be why have an architect? asks the Los Angeles paper. Why not save the architect's fee entirely by furnishing the contractor with a plan of one of these units and allowing him to arrange them and put in the corridors and stairways? How can there possibly be any room for anything "more artistic, practical, substantial and economical," which Mr. Reid says is desirable?

But Mr. Reid does not really mean all that he says or what he says. He wants to make the plans for the $2,000,000 worth of school buildings to be erected in Sacramento and has offered to do the work at a ridiculously low price, less, in fact, than the drafting service alone will cost, considering the present wages of competent draftsmen, if the plans and details are properly drawn. His statements are made merely with the idea of making his own offer look plausible and the compensation asked by other architects appear unreasonable.

Cheap architectural service does not pay. Investigation will disclose abundant proof of the fact. Unfortunately, however, there are many persons who do not know and do not understand why that should be so and such statements as those made by Mr. Reid are calculated to do infinite harm to the architectural profession. He, as well as every architect, knows that the designing of a school building is not merely a matter of assembling a certain number of standard units. Every school building has its own particular problems and it cannot be properly designed unless those problems are recognized and studied and a proper solution of them worked out. Too many school buildings have been designed on the theory that they involve no special problems. If Sacramento wants first-class school buildings it will select architects in whose competency it has the utmost confidence and pay a fee commensurate with good service.

* * *

## The Year's Building Record

In the entire country the 1919 building projects will reach $2,600,000,000, says a New York authority, based on F. W. Dodge Company reports. This includes engineering operations and construction of all forms. It is nearly a billion dollars above the 1918 total, which held the high record. Current projects are one-third residential, one-third industrial, 15 per cent for general business and 10 per cent for public works and utilities.

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If the designing of schools is such a very simple matter as Mr. Reid describes it to be why have an architect? asks the Los Angeles paper. Why not save the architect's fee entirely by furnishing the contractor with a plan of one of these units and allowing him to arrange them and put in the corridors and stairways? How can there possibly be any room for anything "more artistic, practical, substantial and economical," which Mr. Reid says is desirable?

But Mr. Reid does not really mean all that he says or what he says. He wants to make the plans for the $2,000,000 worth of school buildings to be erected in Sacramento and has offered to do the work at a ridiculously low price, less, in fact, than the drafting service alone will cost, considering the present wages of competent draftsmen, if the plans and details are properly drawn. His statements are made merely with the idea of making his own offer look plausible and the compensation asked by other architects appear unreasonable.

Cheap architectural service does not pay. Investigation will disclose abundant proof of the fact. Unfortunately, however, there are many persons who do not know and do not understand why that should be so and such statements as those made by Mr. Reid are calculated to do infinite harm to the architectural profession. He, as well as every architect, knows that the designing of a school building is not merely a matter of assembling a certain number of standard units. Every school building has its own particular problems and it cannot be properly designed unless those problems are recognized and studied and a proper solution of them worked out. Too many school buildings have been designed on the theory that they involve no special problems. If Sacramento wants first-class school buildings it will select architects in whose competency it has the utmost confidence and pay a fee commensurate with good service.

* * *

## The Year's Building Record

In the entire country the 1919 building projects will reach $2,600,000,000, says a New York authority, based on F. W. Dodge Company reports. This includes engineering operations and construction of all forms. It is nearly a billion dollars above the 1918 total, which held the high record. Current projects are one-third residential, one-third industrial, 15 per cent for general business and 10 per cent for public works and utilities.

THE UNIVERSITY OF MONTANA
STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS
BOZEMAN MONTANA

Geo. H. Carsley, Architect — Cass Gilbert, Consulting Architect

MONTANA STATE UNIVERSITY
MISSOULA · MONTANA.

Geo. H. Carsley, Architect — Cass Gilbert, Consulting Architect

# For a Greater University of Montana

THE State Board of Education of Montana recently approved comprehensive building plans for the State University at Missoula and the State College of Agriculture and Mechanic Arts at Bozeman. Mr. George H. Carsley, architect of Helena, in collaboration with Mr. Cass Gilbert of New York as consulting architect, worked out the plans and prepared the designs, which are illustrated herewith. Mr. Gilbert, who perfected the general campus outlines of the University of Minnesota and the University of Texas, is known nationally as one of the country's leading architects.

Throughout the quarter century that has already elapsed since the beginning of construction at the State University of Montana and the State College of Agriculture and Mechanic Arts, there has always been a pressing financial necessity in erecting buildings to get the greatest possible amount of room at a minimum cost. The unavoidable result has been a variety of structures with no particular harmony of style, and with inadequate regard for the question of location of future buildings.

Some three years ago a change in the business management of the university was inaugurated. Dr. Edward C. Elliott was chosen chancellor and he at once took steps to work out the problem of the future architectural development of the two institutions.

The state has adopted the fifty-year plan of expansion. The plan requires the construction of a new building on each campus every two years. During the past year a new Natural Science building has been constructed on the State University campus and a new Chemistry building on the campus of the State College.

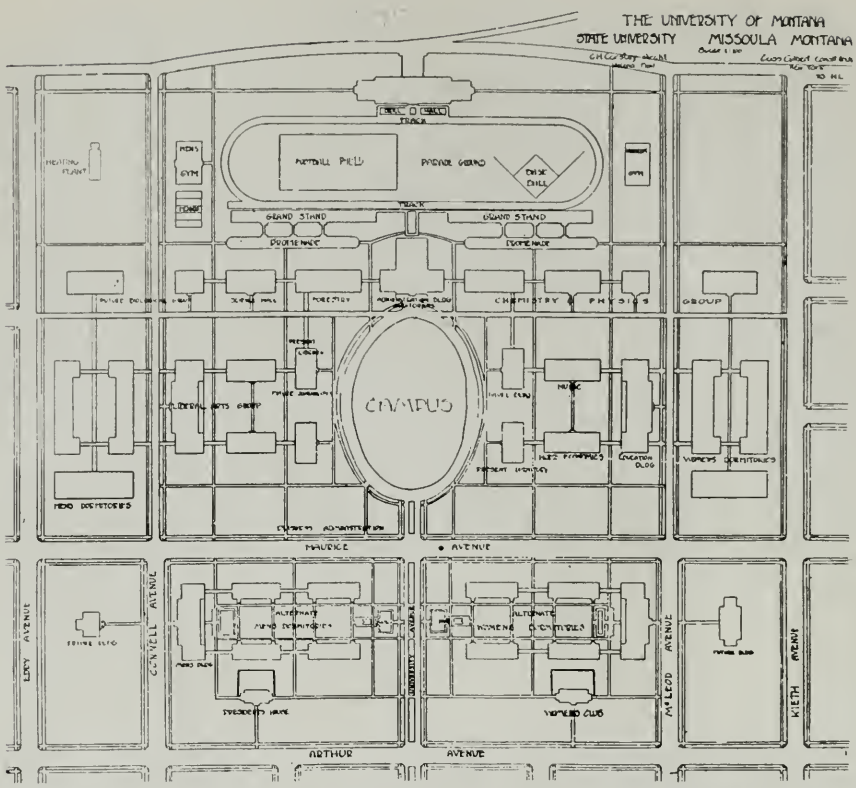
Unlike some of the large universities, such as Minnesota, Wisconsin, Texas, Oregon, and others, Montana has divided the institution into a number of parts, the university proper being located at Missoula, the College of Agriculture and Mechanic Arts at Bozeman, and the School of Mines at Butte.

Some attempt had previously been made to work out a general plan, but on too small a scale, and no effort was made to have designs of the different buildings harmonize. Here an oval center or campus formed the principal feature with major axis running east and west, the campus facing the west, with buildings more or less symmetrically placed around it. Owing to some very capable instructors in charge of development of grounds the result was not unpleasing.

Mr. Gilbert immediately saw the possibilities in this plan and it was adopted as a basis for further study, but it was recommended that additional ground be purchased at the west of front of the old grounds and at either side, part of which has now been secured.

The site of the old main building has been preserved on the major axis but the running and athletic field track, which was located off at one side, was changed to a more central position and armory or drill hall, gymnasiums for both male and female students and power plant were relocated. The laboratory buildings and class rooms are located in line with main buildings, the library, law and liberal arts group north of the oval and the Home Economics, Music and Teachers' Training School at the south, while for dormitory groups two locations are suggested. Either at the north and south boundaries of grounds or in front and on either side of the main approach.

The design suggested for buildings is Italian in character, with rich colored brick walls, paneled and tile roof with broad projecting eaves.




PLOT PLAN, UNIVERSITY OF MONTANA AND STATE UNIVERSITY, MISSOULA

One of the new laboratory buildings has already been built and plans are now being drawn for an additional building.

The college grounds are located in the outskirts of the town of Bozeman in a slight rise facing north, a boulevarded avenue forming one of the approaches from the town, but not on main axis of the group. A symmetrical effect is suggested by a second boulevard at an equal distance from center of group forming a horseshoe approach to center of campus.

Most of the old buildings are out of date and poorly placed and but two of them have been considered in the new plan. The landscape work on the old grounds was good, but not adapted to a large scheme.

In the new plan the main buildings are located about a large rectangular central court. The agricultural and horticultural group is at the northwest and extreme west with its main building on the major axis of the court. The chemical laboratories at southwest, physical laboratories at southeast, engineering buildings at east, athletic field at south and dormitory groups at north. The power plant is at northwest.

While the design of the buildings is of more vigorous type than the university buildings they also are of rich colored brick with tiled roofs, one of which, a chemical laboratory building, is just completed and plans are being drawn for an engineers' laboratory building.

# The Apartment House and Its Income

By T. C. SMITH, in Building Management

THE apartment house business has grown into a very extensive one in Los Angeles. There is now more than $30,000,000 invested in buildings, grounds, furniture and equipment of over 600 regular apartment houses, not including any of the "flat" properties. These apartment houses range in value from $25,000 up to $50,000 each, or an average of a little over $50,000 each.

First, we will consider the construction of a modern apartment house. Most of our structures of this type in Los Angeles have been imperfectly constructed by impractical men and firms; men who knew nothing about the operation of an apartment house. Consequently they knew nothing of the needs of the interior arrangement, which is necessary to provide the conveniences and comforts of the tenants.

The success of the apartment house as a financial investment must come from the inside of the building; from those who occupy it as tenants, or guests, as we like to speak of them. Therefore they must be comfortable and have the most conveniences possible in order to get them to pay adequate prices for the apartments and to get them to remain contentedly for a long time. This brings the percentage of vacancies down to the minimum, and the rents up to the maximum.

Take, for instance, the matter of living accommodations for the "help" in an apartment house; the janitor and the maids. I know of some cases where there was no provision whatever made for the help, and in many others the accommodations are very limited and inferior. This means an additional expense for help, and a depreciation in efficiency, consequently an increase in vacancies and a decrease in rentals, resulting in a considerable depreciation in net income.

Another item of greater consequence is poor closet space and dressing rooms, which causes an average loss in rents of about $5 a month on each apartment, or $100 a month for the house, and $1200 a year on the investment; this is 6 per cent interest on $20,000. In any apartment house these things could have been provided for at an additional cost of $5000, in many cases for $1000 and in some cases without any additional expense. Many furnished apartments have short beds, poor bed springs and inferior mattresses, when proper ones could have been provided for just a few hundred dollars more.

These are some of the reasons why our apartment houses are not more profitable at the present time. With these seemingly small defects remedied, the apartment houses in Los Angeles would pay as large a percentage on the investment as any other legitimate business in the city.

A building should not be looked upon as a pile of brick, mortar and wood, which has been designed by an architect and put together by mechanics. It is an institution, animated by human beings, who live and work there, who have their homes, offices and business in it. It is for their comfort, convenience and profit, and it should be looked upon and thought of as a thing of animation; a part of the life and activities of the universe.

The architect should design the exterior with a view to beauty and pleasing appearance. The location should be well selected, so as to make it convenient for as many people as possible.

The inside arrangement should be planned with much care and with the assistance of owners and managers who have had actual experience in conducting similar apartment houses and know the practical needs of such build-

* Secretary of the Co-operative Apartment House Association of Los Angeles.

ings. These and many other details should be given much thought before the building is commenced.

To operate an apartment house, the manager must first take into account the interest on the money invested in the building and furnishings. For illustration, take a building of fifty apartments valued at $100,000, and the furniture at $30,000. To make an investment of this kind attractive to investors they would need to get ten per cent net, as they can loan their money on the same class of security in Los Angeles at 7 per cent, and mortgages are exempt from taxes in California.

| | PER MONTH |
|---|---|
| The item of interest would be | $1,085.00 |
| Taxes and insurance | 125.00 |
| Salary to manager | 150.00 |
| Salary to housekeeper | 50.00 |
| Salaries to janitor and maid | 200.00 |
| Repairs | 100.00 |
| Replacements | 300.00 |
| (The carpets would cost $15,000 and would have to be replaced every five years.) | |
| Heat and water | 100.00 |
| Depreciation on building | 100.00 |
| Plumbing and incidentals | 100.00 |
| Total | $2,310.00 |

This makes a total expense of $2,310 per month that must be realized out of the building to make it a desirable investment. There must be taken out of the fifty apartments, two apartments for the manager and housekeeper, and an average of four vacancies, which brings the earning capacity down to forty-four apartments. These would have to be rented at an average rental of $52.50 each per month the year round, and this is above the average price at this time. All future buildings, if built on the right plan, can be made to pay this amount, and even more in choice locations.

Most apartment houses in Los Angeles are decidedly too small, a large number of them being two and three stories only, and very few of them over four stories. The larger ones, instead of having been built higher on one lot, have been spread out over two lots. In the few that have been built higher, the apartments on the sixth, seventh and eighth floors have been found to be the most desirable, and consequently bring the best prices.

In the past the apartment house owners paid all the light, laundry, and telephone bills for all their guests, which amounted to an average of $1,500 per year for each building; a ruinous overhead expense. Now the guests pay for all of these items. In addition to this the rates have been advanced about $2,000 a year per building, thus increasing the income 7 per cent. On the $50,000 investment this gives just about 6 per cent net on the better apartment houses, although many which are badly run down, and badly managed, are only just about breaking even.

* * *

## Labor Costs vs. Living Cost in Lumber Industry

Labor cost figures in the lumber industry in 1919 and before the war (1914) show that while wages paid are higher by 65 to 100 per cent in various parts of the country, efficiency has decreased approximately 20 per cent in northern mills (Michigan), about 23 per cent in the South and 10 per cent in California. In these percentages efficiency is based on the hours of labor required to produce a thousand feet of lumber and is irrespective of the wage increase. In some Michigan mills efficiency is

estimated to have decreased 30 per cent since the pre-war period and very few show less than 10 per cent decrease.

In computing labor costs, both wages and efficiency must obviously be considered. Wages per hour in the saw mills in the South average an increase of 84 per cent; in the North they show in several cases 75 per cent increase and as much as 100 per cent in some instances. California mills pay their men about double the pre-war hourly wage. In parts of Washington and Oregon daily wages even on eight-hour basis have been more than doubled.

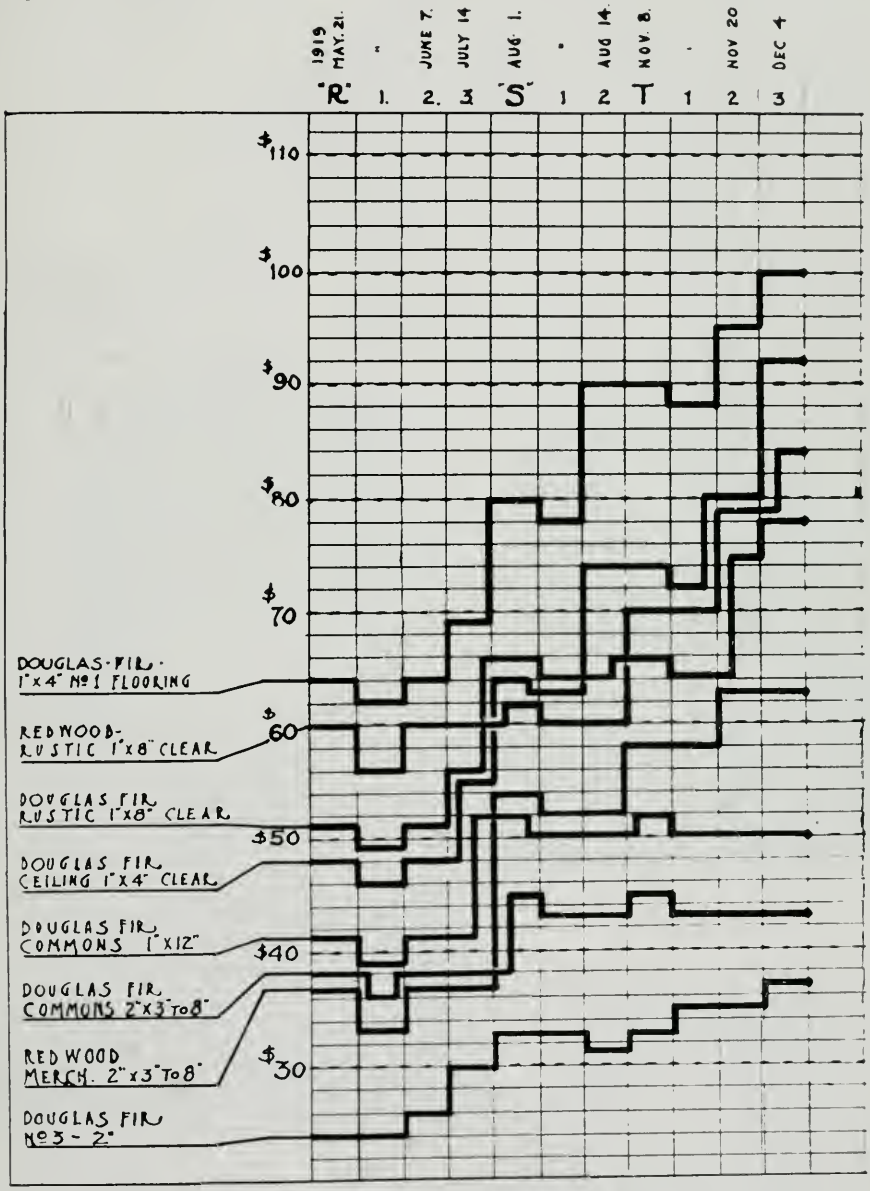



CHART SHOWING RISE IN COST OF LUMBER SINCE MAY 1, 1919
Prepared by Willis Polk & Company

Y. W. C. A. BUILDING, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

DETAIL OF ENTRANCE,
Y. W. C. A. BUILDING,
SAN FRANCISCO
LEWIS P. HOBART,
ARCHITECT

The increase in labor costs in Southern mills is therefore 125 per cent on the basis of cost of production of 1000 feet of lumber at the present wage, compared with the same cost in 1914. The result is about the same in the North—approximately 110 per cent—and would average nearly the same in California.

# Indication

By HARVEY W. CORBETT, Associate in Architecture, Columbia University

PENMANSHIP is not generally considered an essential qualification for an author, yet he must have some means of putting his ideas on paper in order to get them to the public. In the same sense draftsmanship is not an essential qualification for an architect, there having been many great architects who were very poor draftsmen, yet one must have some means of recording architectural ideas in order to study them or have them built.

Drawing is one of the means of recording and studying architectural ideas, and what is generally termed "design" is the study of architectural problems by means of drawings.

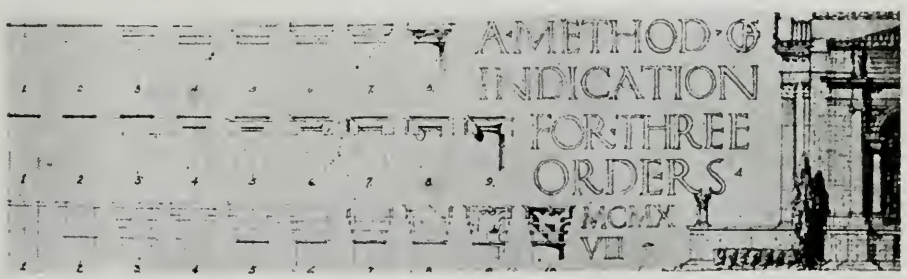
Such drawings serve a purpose only in so far as they help toward better buildings. They have little or no value in themselves and the error is too often made, especially in educational work, of giving to the drawing itself, rather than to the idea back of it, undue importance.

Anything which gives more time for thought and requires less time in the manual work of recording the thought is worth careful consideration. Any device which shortens the work of drafting is as great an assistance to the architect as shorthand and the typewriter have been to the author.

One such device is called "Indication." By this we mean any rapid method of representing architectural forms on paper so as to secure the maximum of effect with the minimum of effort. Indication to be good must truthfully picture the object as it would appear when built (not as it would appear under all circumstances, that being manifestly impossible, but as it would appear under average conditions, that is, for example, in sunshine with shadows at an angle of forty-five degrees).

To teach "Indication" is somewhat like proposing to teach a particular mannerism in hand-writing. The methods of indication followed by draftsmen are as varied as the personalities of the men themselves. The accompanying diagram, therefore, is not given to students as a method to be followed or practiced by them, but simply offered as an illustration of a method practiced by one individual. An analysis of this particular method of indication, however, shows certain principles which should underlie all methods.

Let us, for example, take a capital of one of the Classic Orders. To represent this by a line drawing showing every detail, such as one makes for a working diagram to give to a modeler or stone-cutter, would mean a great deal of tedious work, mostly repetition. Then, in the case of small scale drawings (the small scale is the one most generally used for studying), the confusion of lines becomes so great as to convey an entirely false impression. Furthermore, the "form" of the capital cannot be truly pictured by line alone, but must have shadows. In fact, silhouette and shadows become as important in drawing as they are in the executed building. But drawing by




MR. CORBETT'S SYSTEM OF INDICATION

the use of silhouette and shadows alone is hardly possible where speed and accuracy are required. Lines guided by T-square and triangle work better, so the problem of "indication" becomes one of representing silhouettes and shadows by means of ruled lines.

We study the outline and shadow "spots" of a large-scale, completely drawn and rendered capital, such as those in the antique volume of the antiquities of Rome, and we endeavor to reduce this to a limited number of lines with as few freehand strokes as possible. Then we study the main proportions of the capital in order to get an easy method of remembering the proportions, and finally we arrange them in sequence, so that all the pencil strokes are first horizontally made with the T-square alone, then the next are all with a triangle, using the forty-five-degree side alone, and then the last are the freehand strokes and filling of shadows made with the pencil alone.

Once the method has been established, practice of the method soon brings great facility and quickness and the awful bugbear of drawing a number of Corinthian capitals becomes a rather fascinating game, incidentally producing a drawing which more truly represents the appearance of the object when built, than the old-fashioned long-hand line drawing could ever hope to do.

* * *

## Sacramento School Plans by Competition Bids

The awarding of the planning and designing of the new school buildings to be built under the $3.064,000 bond issue, at Sacramento, will be determined by a call for competitive bids for the work. This was decided by the Board of Education, upon recommendation of the Schools Committee of the Chamber of Commerce.

Secretary Charles C. Hughes has been instructed to advertise for such bids.

Mr. C. W. Dickey, Oakland and Honolulu architect, has been appointed Supervising Architect of the new school buildings to be erected in Oakland under the $4,750,000 bond issue. Mr. Dickey will receive 1 per cent of $3,000,000, representing actual new construction work. The construction engineer, Mr. Marston Campbell, will receive a like amount for his services.

These two gentlemen will act with the bond committee in the selection of six or more architects who will be employed to design the principal school buildings on a 6 per cent basis.

* * *

## No Lumber Exports From Germany

Among articles whose exportation from Germany without special permission is punishable with imprisonment is lumber, especially building lumber, sawn and hewn lumber, mining timbers, ties, pulp wood and all kinds of wood for fuel. Advices have been recently received from the American Mission in Berlin by the National Federation of Construction industries that a proclamation to this effect of the Minister of Economics in Germany was published December 1st. Eight groups of articles were listed, of which the lumber group was one, all being designated as of prime necessity and therefore non-exportable.

# An Opinion on Competitions

By EGERTON SWARTWOUT, in The Architectural Forum

ONLY one thing is certain about a convention of the American Institute of Architects, and that is that some attempt will be made to change, alter or otherwise improve the Competition Code, and the Fifty-second Convention was no exception to this rule. A proposition was brought forward by one of the Chapters and referred to the Post-War Committee, which shows on the face of it such a complete misunderstanding of what the code really means, and such a lack of appreciation of the evils which it attempts to correct that it is inconceivable the Post-War Committee will give it any serious consideration. At the same time as it represents a misconception which is rather widely prevalent, it is perhaps worth while to consider it for a moment here.

It is, in effect, a proposition that all competitions in which no remuneration is paid to the various competitors shall be considered as falling under the present code; but that if the competitors are paid, then the code does not apply—in other words, the Institute would be then put in the position of saying that as the result of long experience it has become convinced that unrestricted competitions work unfairly to the interests of the client and the architect, and that therefore, after much thought the Institute has formulated certain rules for the guidance of its own members that will safeguard the interests of both parties, and that it is unprofessional for any member of the Institute to enter an unapproved competition; but if, on the other hand, the client is willing to pay the competitors, the Institute will forget its rules of fairness and allow the same old scramble that was such a disgrace in the past. A fine proposition truly to be put before the Post-War Committee, which, as I understand it, is supposed to have been formed to make architecture safe for democracy. A client who cannot afford to pay his competitors is bound by certain rules, but the richer client can have everything his own way.

Of course I don't for a minute mean to imply that the gentlemen who proposed this change looked at it in that way at all. They probably had not considered the matter very carefully, and were governed entirely by a feeling of dissatisfaction with the restrictions of the code when applied to smaller propositions or to such cases where one or two architects are asked to submit sketches for some operation in which the owners are unwilling, through ignorance of the real conditions, to comply with what they believe to be reflections on their right of choice.

It is also probable that the proponents of this proposition had either forgotten or perhaps had never been cognizant of the real conditions which led to the adoption of the Competition Code; and yet the code, as it at present exists, is a comparatively recent institution, which was gradually formulated by the most prominent and experienced men in the profession in this country, to correct certain abuses which were becoming rapidly worse and worse, and which threatened seriously the whole structure of architectural practice.

The principle of competition has been inherent in architecture since the very beginning. It has long been an established method in school instruction, and as far as our records go, the commissions for most of the great buildings in history were awarded as the result of some form of competition. Glen Brown in his History of the Capitol at Washington gives an account of the competition that was held for that building, and there are in existence interesting old drawings that were submitted for various other public and semi-public buildings in the early period. One of the first large competitions in

recent times was for the Cathedral of St. John the Divine, and this was followed by those for the New York Customs House, the Public Library and various Government competitions held under the Tarsney Act. In general these competitions did not depart radically from the code as it is now written. There was a definite programme carefully prepared, and the jury was generally composed of architects, and there was a distinct effort on the part of those in charge to promote perfect equality and fairness, both to the competitors and to the owners.

Gradually, however, there had sprung up in the architectural profession a vicious practice of submitting sketches and schemes without remuneration and with only a vague hope of securing the commission. In general, these were either for small public or semi-public buildings, such as schools, banks, libraries, etc., whose directors were either unwilling to accept the responsibility of a direct appointment or who, through the urgency of conflicting claims, felt it necessary to ask several architects to submit sketches; or else for purely private operations, for which a competition was not only unnecessary, but most undesirable, the action in the latter case being usually due to the architects themselves. If a commercial building or even a fair sized house was to be erected, the owner was bombarded with requests to submit plans from every architect who knew him slightly or from many who didn't know him at all, and he naturally concluded that he was doing a favor to the architects by allowing them to make more or less elaborate drawings, although it often afterwards turned out he had already made a decision, and that some architect had the working plans half completed.

When I began independent architectural practice in 1901 this system was almost universal. I remember a particularly distressing experience of my own. A good friend of ours, one of the directors of a certain bank, asked us to submit some sketches for their new building. He said that the committee was undecided as to the scheme, and that all that was necessary was some fragmentary pencil sketches that would show our idea of the type of building the bank should build. We gladly submitted what we thought was a well presented scheme, and were afterwards informed that the commission had been given to a local architect who, with the assistance of a contractor, had submitted a large and very complete plaster model at three-quarter scale of the entire elevation. I remember another instance in which we submitted some very large and elaborate drawings, also for a bank, and discovered not more than two or three weeks after our drawings had been sent in that the contract for the erection of the structure itself had been let, and that at the time we had been asked to submit drawings the bank was actually in possession of complete working drawings, which the board of directors had unanimously agreed to adopt. One or two other experiences along this line convinced us that from a business point of view the unrestricted competition game was not worth the candle, and that those who voluntarily submitted drawings could be divided into two classes: the first, a very small class, who had been definitely promised the job and who only submitted drawings as a matter of form; and the second, a very large class, who wasted an enormous amount of time and money on drawings, without a Chinaman's chance of securing the commission.

There was also an occasional instance in which the owner had the best intentions in the world, and did his best to have everything done with perfect fairness and equality, but in which totally diverse information was given to the various competitors, in some cases by the same official. I can again illustrate this point from an experience of my own. We were awarded the commission for a certain building, and I had a long interview with the chairman of the

building committee, who told me in detail what were the general requirements and what his ideas were on the subject, and we prepared sketches along these lines. On presentation of the sketches a week later I was told that the day after I saw him he had an interview with a friend of his and had radically changed his ideas, and that he intended to let me know, but had forgotten to do it, and that what he really wanted was an entirely different building. Now, suppose this information had been given, not to one man, but to two competitors, each one would have gone away convinced that he had the right information, and yet the first man would have no chance whatever when the award was made.

It was to correct these evils surrounding competitions that the code came into existence. The Institute realized it could not say to the owners that they must conduct their competitions along certain lines that the Institute suggested, because that would be an infringement of personal rights; but the Institute could say to its own members that a state of competition existed when two or more men submitted drawings for the same project at the same time, and that no member of the Institute could enter a competition which did not have the Institute's approval. The formulation of the code was a slow and gradual process naturally, and was subject to rather frequent revisions.

The code was primarily designed to afford perfect fairness to the owner and to the competing architects. It was decided that the client was in need of a professional advisor, who could guide him in the selection of competitors and in the outlining of the scheme, and who could formulate this information in a manner that would be intelligible to each competitor. It was felt there should be a jury composed either entirely or largely of professional men. It was felt there should be absolute uniformity in the information given to the competitors, and uniformity in the submission of drawings, and that absolute anonymity should be preserved. One of the most important things in the code was that the program itself constituted an agreement between the owner and the competitors that one of the competitors would be selected as architect of the building, and this idea has gradually been expanded until most programs now contain a definite contract between the owner and the successful architect. The value of this document agreed on in advance cannot be overestimated. Until a few years ago there was also a requirement that the fee was to be 6 per cent, and that all engineering services ought to be paid for by the owner. This requirement has, I am sorry to say, been withdrawn, the argument given for this withdrawal being that competitions were often held for buildings for which 6 per cent was either too high or too low, and that conditions varied in different parts of the country, that the code was supposed to be an ethical statement, and a sordid mention of percentage should not be a part of it. This argument is all very good in its way, but like many other arguments based on ethical principles, falls in the test of practical experience. This is particularly so in the case of competitions for public buildings. There is usually a building committee or commission, the members of which are apt to be political appointees or public officials *ex officio*. These gentlemen invariably take the stand that it is their duty to their constituents to have the building designed at the lowest possible rate. They say, with some justice, "Why should we pay 6 per cent when John Smith from our own town is willing to do it for 5 per cent, and Tom Jones will cut the rate to 3½ per cent? If this was our own money, we would, of course, look at it from a broad point of view and pay you gentlemen any amount that you say is right; but we cannot go back to our constituents and stand accused of the charge of extravagance.

Of course," they add, "if you can show up some documentary evidence—some clear statement—that we will be obliged to pay 6 per cent or else forego the participancy of the most prominent members of the architectural profession in this country, why then we will be entirely willing to agree to 6 per cent, and we will allow a certain amount for engineering services and traveling expenses; but if you cannot show us certain definite rules, we will be obliged to take the lowest rate." This has happened to my own personal knowledge several times in competitions for public buildings, and I am afraid is bound to happen still more often in the future, and I sincerely hope that some method will be arrived at to obviate this very serious difficulty—by what means I cannot suggest here, possibly some schedule which would apply to different conditions in different sections of the country.

It was, as I have said, to correct the evils caused by the wild scramble for work and the injustice often done by unrestricted competitions that the competition code came into being. In considering it, let us freely acknowledge that it is an impossibility to frame a code that will meet satisfactorily every condition, or which will be suitable for every section of the country. The code as drawn is not perfect, perhaps, and the form in which it is issued is entirely too cumbersome and formidable to meet ready acceptance on the part of the client. To my way of thinking it could, and should, be simplified. The whole matter could, I think, be compressed into one short page, which would briefly explain the reasons for its adoption and the few fundamental principles which are essential. If this simplified form were accompanied by a personal explanation, I do not think there would be one case in a hundred in which the owner would not see the fairness of it and promptly agree to the Institute's requirements. After the owner has agreed the present code and circular of instructions would be primarily for the guidance of the professional advisor.

The essential requirements are really very few. First, there must be a professional advisor; in other words, it is recognized that no one but an architect is capable of expressing the wishes of the owner and the particular requirements of the building in a way that will be intelligible to the competitors and to the jury. It is conceivable, of course, that some laymen might be perfectly competent to write a satisfactory programme, but the code cannot recognize particular instances, but must be general in character.

Secondly, there must be absolute uniformity in the instructions given to every competitor, and there must be absolute uniformity in the presentation of the scheme by each competitor. Certainly this requires no argument. It is the only way in which perfect fairness can be obtained. Third, perfect anonymity must be preserved. Here again no argument is possible. Fourth, the jury should contain at least one professional architect, who preferably should not be the professional advisor, and the jury should consist of at least three members. It has been found from practical experience that no jury of laymen is capable of understanding the intricacies of a plan, and the presence and vote of some professional man is necessary. It is generally advisable not to have the professional advisor a member of the jury, for the reason that it often happens in the preparation of the programme that he has formed a preconceived idea of the solution, and does not come to the judgment with an open mind. Fifth, the owner must employ one of the competitors as architect of the building, and the programme should contain a form of contract between the owner and the successful bidder. This means that if the owner decides he must hold a competition, and does hold it under Institute rules, he cannot, after the competition drawings have been received, refuse to award the commission to any of the competitors, and declare the competition null and void. In brief, that is all there is to the the celebrated Competition Code. The rest is mere amplification, and there is nothing whatever in these simple require-

ments to which any owner can reasonably object. I personally know of no case in which an owner has objected, provided the matter was put before him in a simple, straightforward manner. On the contrary, I know of at least a dozen cases in which a perfectly hopeless disagreement has been quite easily overcome by a personal interview from some one qualified to explain the position fully. In order to lighten the burdens of a small operation, many of the Chapters have standing committees, and provide at little or no expense competent persons to undertake, in simple cases, the task of professional advisor and juror.

Competitions exist from two causes: first, because in most operations of a public or semi-public nature it is obviously impossible to make a direct selection of an architect, without incurring a certain amount of criticism, which all committees are anxious to avoid. In such cases I have found that the committees usually welcome the advice and backing of the Institute. Second, because the owner is unwilling to take the trouble to make proper investigations and determine to whom he shall award the commission, or being a busy man, the easiest way is to allow any one who has made application to submit a scheme. In this case, if the owner does not wish to take the trouble to make a direct selection, he should be willing to give proper consideration to those who are willing to relieve him of this trouble.

My criticism of the competition code, based on somewhat extended experience, both as competitor and as professional advisor and juror, is that there should be a simplified preliminary statement, as outlined above, and that more definite instructions should be given for the guidance of the professional advisor and jury. In my opinion, much of the dissatisfaction caused by competitions has arisen from the fact that the professional advisor was neither a practising architect nor had any previous experience in competitions. The programmes are apt to contain cubage requirements that are quite impracticable and which result from a lack of experience in such matters, and the requirements are either so minutely and metriculously given, that no choice in the selection of a scheme is allowed the competitor, or else they are so loosely drawn that no competitor knows exactly what the essential features of the structure really are. Then, too, it often happens that although the professional advisor is told by the owner that certain requirements are essential, he has the opinion that these requirements should be carefully concealed, so that each competitor can use his own judgment and arrive at his own conclusions. This often results in the elimination of a number of schemes that are really better than the winning design, which has been selected solely because it contained an idea of the owner's that had not been expressed in the programme.

The professional members of the jury are all too often men who have had little or no experience with competitions and are prone to make a decision based on certain ideas of their own, or on suggestions which have been unconsciously conveyed to them by the owner or by the professional advisor, and not on the requirements as set forth in the programme. The jury members should clearly be made aware of the great responsibility which rests on them, and that they are in a similar position to a jury in a court of law. Their decision must be based entirely upon the evidence and nothing else. They must understand that the competitors have no knowledge of the requirements other than that contained in the programme, and the judgment of the competitive designs must be based on the programme alone.

And again, another point which, while it applies to the judgment of all competitions, applies particularly to the larger competitions held for public buildings, is, that a decision involving a commission based on millions of dollars is placed in the hands of a few men, and this decision, while honestly made, is one which would perhaps be reversed by another jury, equally competent, on the next day. Too often personal taste and predilection govern in

preference to the weight of the evidence submitted. It always has seemed to me that in the case of a large competition it would be a very desirable thing to have, say, three juries of three men each who would render separate judgments. If these three judgments were identical, the matter would be absolutely settled; but if, as is possible, each jury made a different selection, then the three juries would meet as one jury of nine, and arrive at the final conclusion. This method is a little more cumbersome perhaps and possibly more expensive than the one usually adopted, but it seems to me that the advantages to be gained from it considerably outweigh the trouble and expense. I would very much like to see it tried.

* * *

## Effect of Sea Water on Concrete Structures

The Society of German Portland Cement Manufacturers, in collaboration with the Material Testing Bureau at Lichterfelde and the Hydraulic Works Inspection Department at Husum, on the island of Sylt, have been experimenting for about 20 years in order to discover the most suitable mixture for concrete for sea-water structures. In this connection Dr. Gary has recently published a detailed report in a communication of the Material Testing Bureau, the conclusions of which are given as follows in Mitteilungen des Reichsbundes Deutscher Technik.

In order to obtain suitably strong structures in sea water, it is necessary to use cement which is as rich as possible in silicates, but poor in kaolin and iron oxide. Such cements, when at the same time they are rich in lime, can be considerably increased in value by adding certain quantities of trass. The decisive factor, however, for the permanence of concrete structures in the sea is the use of mixtures which are as dense as possible and impervious to sea water, while at the same time sufficient external hardening should be given to the substances before they are placed in the sea by exposing them to heat and to moist air. Concrete, the mortar of which contains more than 66 2-3 per cent of sand, will generally not show the necessary density to enable it to stand attacks by sea water for any length of time.—Engineering and Contracting.

* * *

## Federal Study of Lumber Industry

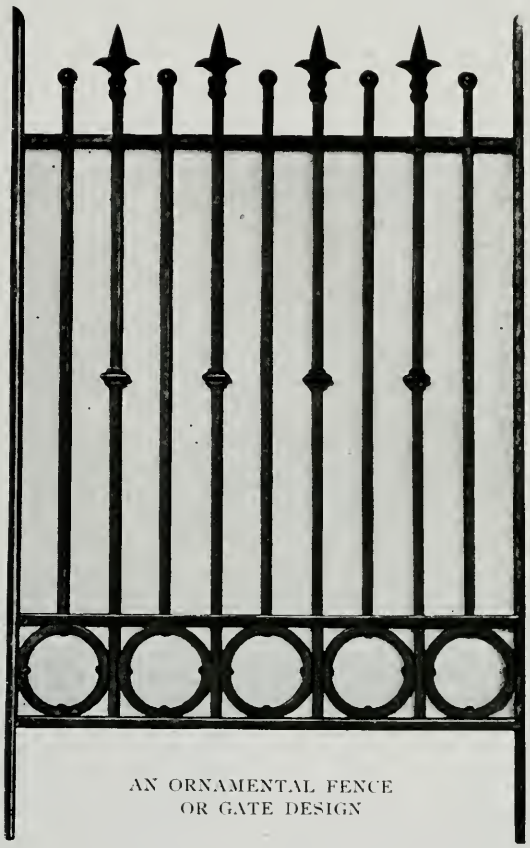
IN the renewal of investigation of the lumber industry by the Federal Trade Commission, which has been expected for some time, the commission is completing the work begun before its creation, by the Bureau of Corporations, when investigations were in progress not only for lumber, but in oil, steel, sugar and tobacco industries.

In reports of the Bureau of Labor Statistics (October, 1919) the increase in prices of lumber and building materials shows a lower per cent over 1913 prices than do the great groups of food and of clothing, and is 15 per cent lower than "all commodities." Of the building materials, lumber prices have increased less than brick, tile and cement, in face of the tremendous demand for lumber.

But aside from any question of prices and costs, the lumber industry has peculiar problems—its relation to conservation policies, adequate shipping and transportation facilities because of the distance of its product from centers of distribution, frequent forced and disadvantageous cut of timber by owners to realize returns, unequal taxation. The co-operation and assistance of such a body as the Federal Trade Commission will doubtless be helpful in reaching a wise solution of these industrial problems.

# The Fence as an Architectural Adornment

FENCES were very unpopular in America for a number of years, writes a Scranton paper. The idea of small town and suburban dwellers was to throw open their yards to the public, providing their best display for the passerby. There was something generous about it—an open-hearted, genial, social quality which characterizes Americans in many relations in life.



AN ORNAMENTAL FENCE
OR GATE DESIGN

Within the last few years Americans have begun to discover that the land about their house should be treated as a part of the home and that it should have the charm of intimacy and privacy. They have reverted to the ways of the early Colonial days, when the fence was not only a protection but an ornamental part of the grounds. Some of the fences around the old houses in the South bear witness to the state and dignity of the persons who lived behind them.

We are still borrowing the foreign idea, hesitatingly, of turning our houses about, with their backs to the street and their fronts to a garden or lawn and flowers which may be as fully and freely enjoyed as the most comfortable living room in the house.

But to go back to fences. A quaint seaside house that was built on Long Island a few years ago had rather a desolate and detached air, set upon the sands which had been reluctantly induced to produce a meagre

lawn and a few shrubs. Last year the property was surrounded with a low post and rail fence painted the same color as the house, and at each post a rambler rose was planted. In a few years that fence may be covered with roses. One of the advantages of having a fence is that one may then also have a gate, and a gate is a good feature for architectural treatment.

Inside a fence one may have a formal hedge, or an informal planting of shrubbery—a pleasing combination. The fence may be made as individual as the house. It may be high, low, plain or ornamental to accord with the house, and lends itself to many variations and possibilities in design.

* * *

## The Fate of Pandrinthan

Pandrinthan is a deserted and crumbling temple in the pleasant Kashmir valley in India. Its fate is an example of the oblivion that comes to those who worship false gods—another proof of the fleeting glory of kings who build unwisely.

Long ago Pandrinthan stood in the heart of a splendid city — the Srinagar of history and story. A great king built the temple walls and planted the willow trees on the shores of the lake. It was the court of Naga, the snake god. Thousands of dark-faced men and women crossed the tiny bit of water to lay their offerings and worship at the shrine.

The great king died a thousand years ago and gradually his city has crumbled into dust. Its magnificence is gone. The tottering temple and the willow trees are the only reminders of the glory of the past.

The scene is eloquent of a thousand years of neglect. The waters of the holy lake are stagnate and black with slime. The ancient temple is eaten with decay. The murmur of the wind among the aged willows suggests the echo of the chant the priests used to drone before the altar.

CLAY MODEL OF HOUSE FOR MR. CHAS. F. GROSS, OAKLAND, CALIFORNIA
Miller & Warnecke, Architects

# Estimating*

By CYRUS J. PARKER

THERE is no question in my mind but what we all make errors in estimates. As a matter of fact, when we get a job that is when we begin to wonder where we have made our error. I have heard fellows say: "How in the devil did I make my mistake?" they feel that contracts are let on errors, judging from the amount of money the contractors claim they have left when they complete their work. You will find in estimating that a man will have to make up a system of his own. I think that every man's method of contracting is peculiar to himself. It would be impossible for me to lay down such a system for another man, while I might take the system I have worked out and be very successful with it. You can buy trade accounts and hand books on estimating, and the majority of them I have read I would not give the snap of my finger for. The work is always different. You never have two pieces of work that cost the same, with all the different classes of architecture to which the previous speaker just called your attention.

I just wanted to call your attention to a few methods of estimating. I happened to spend a few years in Louisiana, and I knew a contractor there in particular who put in his estimates on the basis of cubing or squaring a foot in figuring on it. He is not in business any more. It also reminds me of a fellow who secured a set of plans that were quite bulky, and after looking them over handed them to his partner saying: "Take these damn things and go and weigh them and we will put it in." I know another contractor who claimed he could take a set of plans home in the evening and bring down a figure the next morning. He does it and it is remarkable how close he comes to the value of it. But personally I would not want to risk that kind of a method. For my part I would rather take all of the quantities off in detail and base the estimate on some method of cost keeping that we might adopt. Each one would have to do it to suit himself. There is one advice I would like to give, however, and that is, if you keep a cost system, do not keep it in such a cumbersome manner that you can not handle it. I knew a contractor in Portland who did a large business but used a worn out cost system, and he could not use it any further and went broke. To my mind, after you have a cost system worked out, you must have it in simple form so that you can combine it with good business judgment and the experience you have had in previous work, basing your estimate accordingly.

In estimating a plan it is necessary to find everything on it. If you do not, you may find after you have signed the contract a few lines of notes on the specifications that may cost you hundreds of dollars. I heard of a fellow who was constructing a building and noticed the initials "T R" in all the doors on the plan. After he had the building plastered the architect came around and asked him where he was going to put the transoms. His answer was: "There are no transoms on this building plan." The architect said, "Yes, there are. Let me have the plan and I will prove it to you." He proved it to him as he had "T R" on every door. After that experience the contractor always looked for all the TR'S on the plan in every contract he secured.

I happened to be brought in on an arbitration at one time where the contractors figured from a large plan one-eighth of an inch scale drawings. They had a large marker there, and from the elevation you might have struck

* Paper delivered before Northwest Master Builders' Convention, Seattle, February 20, 1919. Mr. Parker is a member of the Portland General Building Contractors' Association.

there was a cornice around it that might have been of ordinary galvanized iron. The contractors presumably figured on some character of cornice on the outside. After the contract was signed and the building partially completed, the details showed a heavy cast iron cornice around the outside and cross beam incased in cast iron. The cast iron alone cost $1100. The arbitration committee allowed the contractor for that. But it is evident that in figuring a plan we should not take the chance with one-eighth inch scale drawing and put in a figure where we stand the chance of losing money as this man did. And even if he did get the money allowed him by the arbitration board there was trouble and dissatisfaction with the architect and all concerned. It is best to ask for details. Some contractors seem to think if you go to an architect and ask for details he will think you do not know your business. I think that is a part of their business; that is what they are getting paid for, furnishing details so a man can figure intelligently on a plan and not take a chance.

Another thing! An architect frequently resorts to generalities in his specifications, such as "according to the satisfaction of the architect" and "in first-class workmanlike manner" and 'materials the best quality." Those are a few and there are many others that they put in specifications to which you have to give consideration in estimating. How is a contractor to know the specific temperamentalism of an architect when he wants it done to the satisfaction of the architect, when he does not know what will satisfy the architect? So there should not be a general item of that kind in the specification.

There is not one contractor in a hundred who reads the clause, "materials of best quality" and realizes the interpretation that an architect intends to place on it. These must all be considered in estimating. If you do not do so, an architect, if he is inclined to be unscrupulous, could make it very unpleasant for a contractor. And then comes the old clause saying: "This is intended to be a complete job, supposed to include everything necessary even though it is not particularly mentioned." Half of the plumbing might not be mentioned. But the part that is not mentioned must be put in, if you have that kind of a specification. You must consider all these items in compiling your estimates. They are just as important as taking off the quantities. In fact they are often more important.

There is another thing: In the past many contractors resorted to asking sub-bids on their work. Possibly at the present time many do this and possibly many may do so in the future. They act on the sub-bids they get and guess at the rest. A lot of them take sub-bids, and immediately after they have been awarded the contract, the contractors forget the sub-bidder who gave the bid and wasted time on it, and immediately start out to find more after having taken the time of the original sub-bidder. Another method practiced by a contractor I once knew, whom I should say is out of business at this time, was to take sub-bids and revise them five per cent, saying he would beat the sub-bidder out of that much and that would make his regular bid five per cent lower than the rest of the general contractors.

It seems that it might be possible for contractors to get together and adopt some system of quantity surveying. We would not need to make it a guaranteed survey but could employ some man in the association. We would not be bound to use the figures of the survey, but it could be used as a check against the quantities we take off. It seems to me that we might work up something along this line that would be beneficial to contractors generally. It is not practical for contractors to take the immense risks taken by them in the past. Contracting is just as legitimate a business as any mercantile

business carried on in a legitimate manner and I would favor the establishment of a method of opening up bids that would prevent any increase being made to them before they are put in. It is possible to select one out of the association and turn all the bids over to him and let him check them or audit them in a way, and if he finds an error let him refer it back to the original bidder. It would be a check on his estimate and at the same time it would be playing the cards on the table. We have passed the stage where we can play other than the square game. The old time contractors who played the game of opening up figures and adding a certain amount to them have lost all the money they made on that method of figuring.

I believe that is about all I know about estimating. The chances are that I follow about the same method the rest of you do. However, I believe the contractor should prepare himself so that he would take the entire quantities from the plan and not be tied up to a sub-contractor. I think, as a matter of fact, the contractor who plans to take all of the quantities off himself is in a better position to take the figures after he has the job than he is before the job is awarded.

* * *

## Apartments for Rent in Mars---Aviator Predicts Interstellar Journeys

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Advertisements similar to the foregoing may soon be found in our metropolitan papers if the vision is realized of Mr. George De Bothezat, Russian aeronautical engineer, who, in a recent address at Chicago to the Western Society of Engineers, said:

"Among aviation possibilities is the invention of a machine propelled by a jet, which would take no account of space.

"I already have in mind such a plane," he continued. "An ordinary motor flown by a propeller would be used until the air became too rarified, then the motor would be shut off and the plane flown by a series of gas explosions that would drive it on through space. The jet propulsion is not yet perfected, but it's coming soon."—Improvement Bulletin.

* * *

## Frame Houses Built in Seventeenth Century

Illustrations of two frame residences built in the seventeenth century in Massachusetts are shown in the October bulletin of "The Society for the Preservation of New England Antiquities." One of these is the Pierce House at Dorchester, Mass., which is believed to have been built by Robert Pierce who arrived in the "Mary and John" in 1630. This is one of the oldest houses in which the society is interested, and is still occupied and owned by the family.

The oldest portion of the Brown House at Watertown, Mass., was built by Abraham Brown, Jr., about 1663. This is considered a most interesting old house, being a one-room cottage of two stories and a garret, which has come down with amazingly few changes.

# The Effect of Too Much Water in Concrete*

By DUFF A. ABRAMS

CONCRETE is made of a mixture of three materials of entirely different characteristics—cement, aggregate and water. These materials, or any two of them, may be mixed in all proportions; however, it is only a certain range of possible mixtures (which must include cement and water) that is useful as a structural material. A certain proportion of cement must be used in order to secure the requisite strength; a certain quantity of water is necessary in order to develop the hydraulic properties of the cement and to produce a plastic mix; economy dictates the use of aggregate in the mix.

Experience has indicated about what proportions of cement and aggregate must be used to give concrete the necessary resistance for a given purpose, but little attention has been given to the inter-relation of the effects of varying quantities of water on the resistance of the concrete.

A thorough investigation of this subject is in progress at the Structural Materials Research Laboratory. These tests have shown the following relations to obtain:

1. With a certain aggregate of the same grading and sufficient water to produce a concrete of a given plasticity, the strength of the concrete, within the usual range of mixes, is proportional to the quantity of cement in a unit volume of concrete.

2. With a given aggregate and the same quantity of cement, the strength of the concrete is a maximum with the smallest quantity of water which can be used to produce a plastic mix; any increase in the quantity of water is accompanied by a very rapid falling off in the strength of the concrete.

3. With a given aggregate mixture, the same quantity of cement, and sufficient water to produce a concrete of definite plasticity, (a) the strength of the concrete increases with the "coarseness" of the aggregate up to a certain limit; (b) this limit of "coarseness" is higher for a larger quantity of cement and lower for a smaller quantity of cement; (c) the limit of "coarseness" of the aggregate which it is feasible to use varies slightly with the character of the material, being somewhat lower for a mixture of sand and crushed stone than for sand and well-rounded pebbles, and still lower for mixtures in which crushed stone or similar material is used as fine aggregate.

4. For given proportions of cement and aggregate, the quantity of water required for a definite plasticity depends largely on the grading of the aggregate and to only a minor degree on the character of the material, shape of particles, etc.

5. For a given aggregate, the quantity of water required to give concrete of the same relative plasticity is directly proportional to the quantity of cement.

If we assume that concrete materials of suitable character are at hand, and that mixing and other details are properly cared for, the engineer generally has the following alternative for improving the quantity of the concrete:

a. More cement.

b. Coarser aggregate (within certain limits).

c. Less water (limited by the necessity of producing a plastic mix).

Economy dictates the use of the smallest quantity of cement which will produce concrete of the desired resistance. The tendency has been during recent years to use entirely too much water; in many instances the water used is 50 to 100 per cent in excess of the quantity which gives the highest strength, resulting in concrete of not more than 25 to 50 per cent the strength that should

*From Concrete Highway Magazine. The author is Professor in Charge Structural Materials Research Laboratory, Lewis Inst., Chicago.

have been obtained with the same cement and aggregate and a proper quantity of water. While some sacrifice in strength is generally necessary in order to secure concrete which may be handled and placed at low cost, it is absurd to sacrifice 50 to 75 per cent of the strength which is practically available in this way. While the injurious effect of excess water in concrete has been given little attention, a great deal of emphasis has been placed on the benefits to be derived from the use of coarse, well-graded aggregate.

The experimental work referred to above has already thrown much new light on this subject. We are forced to the conclusion that the chief advantages of well-graded and coarse aggregate as compared with poorly-graded aggregate come from the fact that *the concrete can be mixed to a workable plasticity with less water*, and not to any inherent difference in the behavior of aggregate of different sizes. In other words, while coarse, well-graded aggregate is highly desirable, *little or nothing is gained by using aggregates of the highest grade unless we take advantage of the fact that it can be mixed with correspondingly less water*. This makes it apparent that many of the shortcomings of concrete made of fine or poorly-graded aggregate should be charged to the additional water required to mix the concrete.

It is as important that an upper limit be placed on the quantity of water as it is that a lower limit be placed on the quantity of cement in the batch. It would be just as consistent to specify the quantity of aggregate and water and leave the proportioning of the cement to the judgment of the mixer foreman, as to specify the quantity of cement and aggregate and leave the proportioning of the water to the mixer gang. Exactly the same effect is produced by the use of an excess of water as by a deficiency in cement; and it is more important now that special attention be given to the water in concrete, since the present methods give reasonable assurance that the proper quantity of cement is used.

All the benefits which may arise from using good cement, coarse, well-graded aggregates, thoroughly mixing the concrete, etc., are completely nullified if an excess of water is used in the mix.

"In mixing concrete use the least quantity of water that will produce a workable mix, then give the concrete as much water as possible after it has begun to harden," is the only safe rule to follow. The amount of water which should be used with given materials cannot always be determined in advance; it will also vary with the nature and size of the work. However, every effort should be made to keep the water content of the concrete at a minimum. It is not feasible to use the quantity of water corresponding to the highest possible strength of concrete (a similar statement may be made with reference to the "coarseness" of the aggregate), yet this difference should be reduced to a minimum by using the smallest practicable amount of water.

The abuse of the water element in concrete has come about solely from the fact that it is cheap, and frequently facilitates handling and placing. Much of the concrete which is being made at the present time could be greatly improved, at no additional cost, if the owner were compelled to pay, say, one-half to one cent per gallon for all water going into the mixer. In many respects it is unfortunate that water is not an essential element in the cost of concrete.

Probably the greatest improvement which can be made in our present methods of manufacturing concrete will come from a better understanding of the very injurious effect of excess water and a saner practice in proportioning this important element of the mix.

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**Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."**

## *DIVIDING LINE BETWEEN ENGINEER AND ARCHITECT*

What is the dividing line between the work of engineers and of architects, and is an architect justified in accepting work which is usually regarded as being strictly within the sphere of the engineer, or vice versa?

Naturally members of both professions do not look with favor on what may be called encroachments on their particular fields; and doubtless both could put up strenuous arguments to prove that work which may be on the border line comes within their own special province.

For example, there are engineers, sometimes termed construction engineers, who make a specialty of designing and supervising factories and warehouses — buildings which do not call for architectural beauty, but for great structural strength and design to meet the needs of given industries. Architects might contend that members of their profession are capable of designing such plants, while engineers will be equally emphatic that such buildings involve little or no architectural knowledge and are purely within the domain of the engineer.

The general question of engineers' and architects' work was recently discussed by the Montreal branch of the Engineering Institute of Canada, the discussion being based on a report that the county authorities at Pittsburgh had given commissions to two firms of architects to design and supervise the construction of two large bridges, one with a 500-foot span. Written comments by members on the subject were read. These, with one exception, were emphatic in their condemnation of this action, and some members even advocated a policy of boycotting should the practice become more general.

Fortunately the discussion at the meeting was on more conciliatory lines, and according to Contract Record, a trade journal published in Toronto, the general feeling was that the subject was one for co-operation, not for measures which would create an-

tagonism between the professions. It was frankly admitted by members of the Quebec Architects Association, that such large bridges as were referred to were within the province of engineers, but it was pointed out that many bridges designed by engineers were lacking in beauty, which defect could have been obviated by consulting architects. Each profession had its own field and when an engineer, in designing a bridge, desired to make it architecturally beautiful, he should call in an architect as consultant.

The opinion was expressed that while the design of bridges was a matter for engineers, the latter had often sadly lacked a sense of aesthetic beauty in making their designs. Some of the bridges were downright ugly.

Times have changed, and now people look for beauty as well as utility, and as a means to these ends what could be better than the combined talents of the architect and the engineer?

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### *ARCHITECTURE AND THE MOVIES*

Perhaps no one medium makes so strong an appeal to the layman as the moving picture. It appeals to that most sensitive organ, his eye. It reaches him when he is most receptive. It is easily accessible and may reach him often.

With the work among industrial plants conducted by the Bureau of Commercial Economics, and with the plan for civic education so well thought out by the National Catholic War Council in Washington, two very large and comprehensive movements are going forward. In each of these the subject of art and architecture would have a fitting place, but in neither does it appear to be listed among the topics treated. There are isolated examples, says the American Architect, of the use of the motion picture for purposes of art instruction, but they have never been "played up" to their full capacity.

It is a sensible and legitimate use of the moving picture which the Garden Cities and Town Planning Association of London made some time ago in filming a number of contrasted views of good and bad housing in that city, and which on another occasion was made by M. Bonnier, who ended a Town Planning Conference in Paris with a moving picture presentation of the evolution of the Paris plan.

But the use of the motion picture as an educator of popular taste has greater force in architecture than that. Not only in the labelled "educational" films may instructive and interesting buildings be shown, but in the unnoticed course of the average "feature," opportunities are unfolded for making attractive to the lay mind all the finer artistic possibilities of a home, or indeed of any other building or group of buildings. And by the same method, means may be availed of to cast just the right shade of disparagement upon the gaudy and poorly chosen furnishings and decorations.

## *Notes and Comments*

**School Designer in Oregon Answers Public Censure.**

In Oregon another architect has taken the newspapers into his confidence in an endeavor to counteract public condemnation of his school work following misstatements anonymously published. The architect in question is Mr. A. M. Standish of The Dalles, whose letter to the public is, in part, as follows:

In The Dalles Chronicle of November 19 there appeared an article of a scurrilous nature, attacking my work on the East Hill and Industrial Arts school buildings. The parts of the article not plainly bearing the marks of a malicious desire to attack and slander me were extremely misleading.

I was employed by the school board to prepare plans for the buildings. The plans met with the approval of the school board for they were approved without hesitation. The work proceeded satisfactorily and in absolute accordance with the plans and specifications as well as in complete ac-

cordance with good workmanship. In no instance did any of the work lack thorough and careful inspection and supervision at all stages of building.

An architect like any professional man, artisan or workman must be judged by his work. I am willing to be judged by mine. I am perfectly willing to submit to this acid test. Let me be judged by the product of my labor.

My relations with the state board of architects' examiners is an extraneous question and is not at issue. It is equally as foreign to the subject as to whether I wear a dark or light colored suit of clothes or black or tan shoes while supervising the construction of a building.

That my friends might feel assured that the trust imposed in me in the construction of the school buildings and as a proof that my workmanship meets the highest requirements, I took the opportunity of having Mr. W. L. Smith, of the firm of Smith & Griffiths, reputable and widely known Portland architects, inspect the buildings which I have recently designed and erected.

After a rigid and impartial inspection, Mr. Smith submitted the following report:

To Whom It May Concern:

I have gone thoroughly over the recent buildings designed and erected by Mr. A. M. Standish, of The Dalles, Ore., and, in my opinion, they are well and economically constructed; in fact, considering the amount of money expended, very well constructed indeed. The workmanship throughout is very good. The concrete work is first-class as is also the plastering, and the buildings throughout show thorough and capable superintending. The general finish is neat and in keeping with the rest of the work.

I think Mr. Standish has shown good judgment in solving these problems.

SMITHS & GRIFFITHS,
Architects.
By W. L. Smith.

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**Disagree with Sir Lutyens**

In a 1919 issue of The Architect and Engineer we published extracts of a newspaper interview with Sir E. Lutyens, the British architect, on "Architects and Architecture." That members of the profession differ with Sir Lutyens is evident from the following communication addressed to the Editor of the Cape Town Architect and Engineer:

Sir,—As a country correspondent, not in immediate touch with the daily press of Cape Town and the current thought in professional quarters of the Mother City, I venture to record my contemptuous arraignment of the manner in which the architects of Cape Town have received the absurd utterances of the distinguished architect knight who has recently left our shores.

I scanned the article under the above heading in your last issue in a vain attempt to discover either sense or sensibility in the views which Sir E. L. Lutyens records in an interview given to a representative of the "Cape Times."

If "competition among architects is a child born of distrust out of failure, to be avoided if we would have great architecture", I would like to ask Sir E. L. Lutyens why he has so actively assisted "Country Life" in holding its architectural competitions?

"Registration for architects" we are told, "would assuredly toll their knell. They are in no way mobilized and are professionally no more than Irish peasants." Does this statement postulate that registration is a state of immobilization? If so, the view expressed is a curious inversion of fact. If not so, then what does it mean? Your humble deponent cannot fathom.

Though only a country practitioner, I am not unaware of the high standing of Sir Edwin Lutyens in the sphere of English domestic architecture. I am, however, also aware that his opinion on matters architectural are neither sought nor heeded in the Old Country, and I trust your other readers are duly cognizant of that fact and will not be misled by the expressions he gave utterance to which are only worthy of comment because of the unwarrantable publicity which has been given to the mental posturing of this super-poseur. . . . .

Yours faithfully,
"Rusticus."

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**Shall the Plumber Have a New Name?**

Some of the trade press are advocating a new name for the "plumber" who, now that he is in the millionaire class, or so close to it it would be painful to make a distinction, would seem to be entitled to a more aristocratic title. It has been suggested that "Sanitary Engineer" be substituted for plumber, which title would at once raise him to the ranks of a profession instead of a trade. Would this new name apply to the fellow who comes to your house to patch a leak in the water pipes as well as to the man who contracts for a complete installation of plumbing in your building? Both of these craftsmen now labor under the title of plumber, one as a master and the other as a jobber.

One R. Vissey of Cleveland claims to be the originator of the term

"Sanitary Engineer," having advocated its use as early as 1913. "Plumber" translated means a man working in lead. How erroneous and false this is! How few "Plumbers" this day could line a tank either by the burning or soft solder process, make a trap from sheet lead, or even "swipe" a straight joint.

Why should we continue to be called "Plumbers" when the name is misleading, bearing an undesirable odium created by the plumbers themselves, by their "puns" broadly circulated? asks Mr. William Attlesey, in a communication to the Valve World, and who claims to have advanced the merits of "Sanitary Engineer" long before Mr. Vessey of Cleveland was heard from. To quote Mr. Attlesey:

The change of name I realized more than twenty years ago when I took my father's business over, "established in 1849," and attempted to continue under the head which you suggest, "Sanitary Engineer," which my stationery shows (I enclose copies) and continued for about ten years and many followed me. But unfortunately they were beginners, and did not have the least conception as to its meaning, taking it for a high sounding substitute, and they failed to advance themselves in an educational way and still continued to be "diggers of ditches and cleaners of sewers."

Now in these days of education and advancement I think the time is ripe for the change and it should be made, as the majority of the craft are advanced enough to "make good" in all the name "Sanitary Engineer" stands for.

An entirely different view is taken by Mr. William H. Ross of New York city, who thinks that if 99 per cent of the plumbers are entitled to be called "Sanitary Engineers," it would not be stretching a point the slightest bit to call him a doctor. All appreciate the importance of the plumber and no sane person would depreciate his calling, as it is honorable and necessary, but to call him a "Sanitary Engineer" would surely be a misnomer, and, besides, why depreciate the true meaning of the word "sanitary"?

As it is now, continues this correspondent, we have too many engineers, too many doctors, too many professors, and I am quite sure that the vast majority of the plumbers would feel more highly honored to be called Mr. Plumber than Mr. Sanitary Engineer or Mr. Doctor Fixit.

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**Ignorance of Cost is Manufacturers' Greatest Handicap**

The conditions referred to in the following editorial from the Saturday Evening Post, apply with full force to the brick industry. The national association is now preparing data for a uniform cost system and urges cooperation of members in this work. Its importance is indicated in the Post editorial:

Of all the handicaps that retard business success none is more serious than the ignorance of manufacturers in the matter of production costs. The Federal Trade Commission reports that in the United States only ten per cent of our industrial establishments know what it actually costs them to manufacture their products; forty per cent simply estimate their costs and fifty per cent have no method whatever of finding out what their production charges really are. This condition is largely responsible for a national situation where more than one-third of our 300,000 manufacturing companies did not earn one per cent on the billions of capital invested in them.

One of our leading authorities on shop efficiency contends that with correct equipment and proper instruction the average workman will do at least three times as much as he now does, and can continue to do this greater work month after month. One large automobile manufacturer called on science to modernize his methods, with the result that certain of his costs were reduced two-thirds, with the same product and the same equipment and men. Only the intense application of brains to business will remedy the present situation of decreasing profits and rising costs.

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### Architects for County Hospital

The Board of County Commissioners, Portland, Oregon, has selected Messrs. Sutton & Whitney, architects, Lewis building, to prepare plans and specifications for the proposed county hospital to be built on Marquam hill, adjoining the new medical school of the University of Oregon, which was recently completed.

The county has available $200,000 for the building and it is the intention of the commissioners to appropriate additional sums in the next budget to erect new units.

## 89 Architects Registered in Oregon

The registration of Oregon architects made necessary by the passage of the law by the last legislature has been completed and 89 architects have been given certificates and passed by the board.

The complete list, with the business address of each architect, follows:

ALLYN, FRED S. (Lawrence & Holford, Chamber of Commerce Bldg.), Portland.
BARRETT, ROBT. E. (The Foundation Co., Ltd., Victoria, B. C.), Portland.
BARTLETT, R. R., Astoria.
BEAN, C. R. (Lawrence & Holford, Chamber of Commerce Bldg.), Portland.
BENNES, JOHN V., Chamber of Commerce Bldg., Portland.
BERGHOLTZ, EDMUND, 807 Spalding Bldg., Portland.
BIDWELL, EDMUND (Strong & McNaughton), Corbett Bldg., Portland.
BRIDGES, J. R., JR. (Bridges & Webber), Chamber of Commerce Bldg., Portland.
BLOCK, MILTON S., La Grande, Oregon.
BROWNE, P. CHAPPELL, Portland.
BURGRAFF, C. R., Albany, Oregon.
CASH, EARL G., Henry Building, Portland.
CHANDLER, W. G., Marshfield, Oregon.
CLAUSSEN, WM. E. (Claussen & Claussen), Macleay Bldg., Portland.
CLAUSSEN, M. FRED, Macleay Bldg., Portland.
DERBYSHIRE, P. W., 1218 Spalding Bldg., Portland.
DE YOUNG, J. W. (De Young & Roald), Spalding Bldg., Portland.
DOUGAN, L. L. (Houghtaling & Dougan), Henry Bldg., Portland.
DOYLE, A. E., Worcester Bldg., Portland.
DITTRICH, H. C., 1219 East Thirtieth St. North, Portland.
DUPUY, A. L. (Camp & Du Puy), 426 East Alder St., Portland.
DUNHAM, GEORGE FOOTE, 1225 N. W. Bank Bldg., Portland.
ERTZ, CHAS. W. (Ertz & Wegman, Pittock Block), Portland.
FARWELL, MILO C. (L. R. Bailey, N. W. Bank Bldg.), Portland.
FREEMAN, C. N., Silverton, Oregon.
GAUNT, NEWTON C., 708 Irving St., Portland.
GOODRICH, C. L. (Goodrich & Goodrich, Abington Bldg.), Portland.
GRIFFITHS, E. F. (Smith & Griffiths, Gerlinger Bldg.), Portland.
HALL-LEWIS, P. M., The Dalles, Oregon.
HATCH, R. N., Pendleton, Oregon.
HOFFMAN, L. N. (Whitehouse & Fouilhoux, Railway Exchange Bldg.), Portland.
HOLFORD, WILLIAM C. (Lawrence & Holford, Chamber of Commerce Bldg.), Portland.
HOPKINS, RONALD 513 E. 48th St. N., Portland.
HOUGHTALING, C. A. (Houghtaling & Dougan, Henry Bldg.), Portland.
HOYT, W. T. S., 410 Fifth St. S., Portland.
HUFFMAN, J. N., 4147 63rd St. S. E., Portland.
HUMMEL, C. F., Boise, Idaho.
HUNZICKER, JOHN, Eugene, Oregon.
JACOBBERGER, JOS. (Jacobberger & Smith, Board of Trade Bldg.), Portland.
JAMES, CHAS. D., Couch Bldg., Portland.
JENKINS, A. C., Albany, Oregon.
JOHNSON, FOLGER (Johnson & Parker, U. S. Bank Bldg.), Portland.
KLEEMAN, OTTO, 155 East Fourteenth St.
KNIGHTON, W. C., U. S. Bank Bldg., Portland.
KABLE, C. H., 774 East Main St., Portland.
KRONER, ERNEST A., Worcester Bldg., Portland.
LAWRENCE, E. F. (Lawrence & Holford, Chamber of Commerce Bldg.), Portland.
LAZERUS, EDGAR N., Chamber of Commerce, Portland.
LEWIS, IONE (Whidden & Lewis, Wilcox Bldg.), Portland.
LEGG, F. A., Salem, Oregon.
LUCIUS, W. W., Lewis Bldg., Portland.
MAGNUSSON, FRITHIOF, Marshfield, Oregon.
MARTIN, C. B., Railway Exchange Bldg., Portland.
MARTIN, RICHARD, JR., 455 Hassalo St., Portland.
McMINN, ROY BEN, 405 E. 47th N., Portland.
MERRIAM, CHAS. A. (associate of A. E. Doyle), Seattle, Washington.
MILLER, ED. A., Henry Bldg., Portland.
MILLS, WAYNE L., 605 East Sixty-second St. North, Portland.
MILLER, C. B., La Grande, Oregon.
MARSMORE, FLOYD ARCHIBALD, Seattle, Washington.
OSTLIND, EROR B., Marshfield, Oregon.
PARKER, JAMISON (Johnson & Parker, U. S. Bank Bldg.), Portland.
POST, GEO. E. (Whitehouse & Fouilhoux, Railway Exchange Bldg.), Portland.
REESE, R. C. (A. E. Doyle, office), Portland.
ROALD, KNUD A. (De Young & Roald, Spalding Bldg.), Portland.
ROBBINS, C. C., 67 N. 20th St. N., Portland.
SCHACHT, EMIL, Commonwealth Bldg., Portland.
SHARP, FRANK K. (Emil Schacht, 324 E. 47th St. S.), Portland.
SMITH, W. L. (Smith & Griffiths, Gerlinger Bldg.), Portland.
SMITH, A. H. (Jacobberger & Smith, Board of Trade Bldg.), Portland.
STOKES, F. M., 1003 Chamber of Commerce Bldg., Portland.
SUTTON, A. (Sutton & Whitney, Lewis Bldg.), Portland.
THOMAS, LEE A., Bend, Oregon.
THOMPSON, LEWIS I., 91 N. Tenth St., Portland.
TOURTELLOTTE, JOHN E. (Tourtellotte & Hummel, McKay Bldg.), Portland.
TOBEY, W. E., Portland.
WALLWORK, CARL H., Portland.
WATT, JAMES, 1159 Mallory Avenue, Portland.
WEBBER, FRED T. (Bridges & Webber, Chamber of Commerce), Portland.
WHIDDEN, W. M. (Whidden & Lewis, Wilcox Bldg.), Portland.
WHITEHOUSE, M. H. (Whitehouse & Fouilhoux, Railway Exchange Bldg.), Portland.
WICKS, J. E., Astoria, Oregon.
WILLIAMS, DAVID L., Chamber of Commerce Bldg., Portland.
WILLIAMS, E. F., Chamber of Commerce Bldg., Portland.
WHITNEY, H. A. (Sutton & Whitney, Lewis Bldg.), Portland.
WHITE, W. A., Oregon City, Oregon.
WHITE, F. MANSON, Chamber of Commerce Bldg., Portland.
WILSON, JOHN W., Third and Yamhill Sts., Portland.
WRIGHT, GEO. R., Pendleton, Oregon.

## No Room for Doubt

"Is that picture a sunrise or a sunset?"

"Sunset. I knew the artist. He never got up early enough in the morning to paint a sunrise."—Washington Star.

Prospective Tenant—"Is the place within walking distance of the railway station?"

"I dunno," answered the house agent, cautiously. "How far can you walk?"—London Answers.

### Should Supply No Estimates

The injurious effect of indiscriminately distributing unrepresentative cost data among engineers and inexperienced contractors by equipment and material men, is well recognized. From this practice there result low estimates of cost and exaggerated ideas of the contractor's profits. One of the fields in which the practice is now most common is that of highway construction, since the volume of work to be done has increased so tremendously that many who are without actual experience in this type of work, or even in any class of construction, either prepare estimates of cost or go out to build roads.

Without doubt the greatest harm results from representatives of machinery and material firms supplying engineers or contractors with detailed estimates of cost, as the tendency is to furnish figures that look plausible and are perhaps fair for isolated cases and continuous work, but fail to consider actual working conditions.

One of the members of the Associated General Contractors has put the matter up to an equipment company in the following way, says the New Letter, official organ of the A. G. C.:

We have your recent letter requesting a statement of costs of hauling with your wagons.

We have a very strong prejudice against manufacturers publishing co-called "costs" of handling material with their equipment, and in particular the preparation of detailed estimates, and you will note at the present time there is agitation by the Associated General Contractors to endeavor to persuade firms to stop this practice, as it has a tendency to encourage people to enter the contracting business that have a few dollars but little sense.

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### Interest in School of Architecture

Writing of the outlook for the School of Architecture at Columbia University, Mr. Richard F. Bach, curator, says:

Owing to the greatly increased interest in building, students throughout the country have vigorously responded to the invitations of the various schools to undertake the professional study of architecture now. Columbia expects its full share of this renewed interest. The number of inquiries would indicate a greatly increased number of men on our rolls for the academic year 1919-1920. This applies to both the School of Architecture day course and to the Extension Teaching course. In the latter department the new course leading to the Certificate of Proficiency in Architecture is now well established. Those who receive this certificate, which is a regular diploma of the University, are recognized by the State as graduates of a school of architecture, and are not required to take the examinations required of candidates for state registration.

* * *

Since this letter was written complete registration figures have been announced, as follows:

| | |
|---|---|
| School of Architecture | 52 |
| Combined course | 16 |
| Certificate of Proficiency in Architecture | 14 |
| Extension teaching | 150 |
| Total | 232 |

### National Conference on Concrete House Construction

From February 17 to 19 inclusive, there will be held at the Auditorium Hotel in Chicago, a National Conference on Concrete House Construction. The purpose of the Conference is twofold, first, to consider the housing problem in the United States and Canada, and second, to present, crystallize and make available information regarding the most modern practice in the construction of concrete houses and concrete housing projects.

We cannot get away from the fact that there is an alarming scarcity of housing accommodations, and that unless some decisive and far-reaching effort is made to relieve the situation we, in this country, will find ourselves in the condition now existing in some European countries where people are forced to live in caravans and tents or any other temporary shelter that can be thrown together.

The present social and political unrest within our land is in no small measure an outcome of this deplorable condition. Families living in rented quarters must always be in surroundings marred and abused by others. By continually moving from one place to another they are unable to make permanent friendships and associations. Such a condition leads to dissatisfaction, induces unproductiveness, and brings about a gradual descent in the social scale. The home owner is the rock on which the foundation of the nation's political and economic stability is built.

Throughout America there is no more vital need than that of home building, and the organization of such a housing conference as this is a timely recognition of the urgent need to attempt relief for existing conditions. The very great shortage at present is attracting public attention not only to the immediate necessity for more houses but also to the fundamental need for housing of the sort that makes for good homes and happy and contented people.

The house must be more than just a shelter and the community more than just a group of houses. Individual ownership of the home builds pride in the community and makes for good citizenship. More and more, home builders are realizing the necessity of building economically and permanently. Demand for information has been so great and practices so varied as to make the need felt for the standardization of the practice of constructing concrete houses.

The National Conference on Concrete House Construction is being called with a view to meeting these demands. It will pay especial attention to methods of financing home building, community planning, fire protection and methods of constructing the various types of concrete houses. Every phase of the housing problem will be considered.

The following committees are now being organized:

Architecture and Design,
Community Planning,
Financing Permanent Homes,
Fire Prevention and Insurance Rates,
Building Codes,
Monolithic Concrete Houses,
Special Unit Houses,
Concrete Block Houses,
Concrete and Cement Roofing.

Many well known organizations are cooperating in this movement, among them being the American Concrete Institute, the Associated General Contractors of America, the Concrete Products Association, the Portland Cement Association, the Illinois Society of Architects, the Illinois Chapter of the American Institute of Architects, the U. S. League of Building and Loan Associations and many other organizations of local and national influence.

During the week in which the National Conference on Concrete House Construction meets there will also meet at the Auditorium Hotel the American Concrete Institute, the Concrete Products Association, the Concrete Block Machinery Association and the American Concrete Pipe Association.

The conference will be attended by architects, contractors, community planners, cement products manufacturers, industrial and real estate development concerns, building and loan associations, and others interested in any phase of the housing problem. Individuals and concerns engaged in these and allied occupations are urged to attend the Conference or send delegates so they may take part in launching a movement which will be of inestimable benefit to the nation at large.

Those intending to attend should write the Secretary, 111 West Washington Street, Chicago, Ill., for program.

## The Correct Definition of Engineering

Editor The Architect and Engineer:—

As one of your original subscribers who has consistently read your magazine from the start, I note with a great deal of interest your article in the November issue, on page 124, on the correct definition of Engineering, and I have read this article with special interest.

It brings to mind a very pleasant banquet that was given several years ago at the Engineers' Club in San Francisco in honor of Mr. William Kent, author of "Mechanical Engineers Handbook," familiar to all mechanical engineers and very well known and used by all other engineers.

It was during Mr. Kent's address at this banquet that he stated that some few years before he had been called upon to give his definition of Engineering and that in looking up the various authorities he found no definition that in his opinion adequately covered the case and that with their permission he desired to present one that he had coined, and which is as follows: "Engineering is both the science and the art of overcoming the resistance of nature—especially human nature."

Considering the high esteem and regard in which he is held by the engineering profession and the concise manner in which he defined engineering, and especially that phase that refers to the human element in engineering, I feel that it is a very timely definition and one that must be recognized more and more as we take into account the part that human nature enters into all of our engineering as well as our industrial accomplishments, and that the engineer or captain of industry who would best succeed in the coming days will be the one who considers the human relation that should exist between employer and employee and endeavor to the best of his ability to overcome the resistance of human nature.

Yours very truly,

WARREN H. McBRYDE.

230 California St., San Francisco.

## Wash in Gasoline

Editor, The Architect and Engineer:

Is there a sure and quick way, to enhance, renovate or increase the "Transparency" of old or new drawings or maps, (India ink) on Tracing cloth?

If you could give me any information or data in this matter, it would be highly appreciated.

Very respectfully yours,

J. REED GIDDINGS,
P. O. Box 361, Healdsburg, Calif.

## Washington State Society Elects

The Washington State Society of Architects met on December 2nd at Seattle, and elected the following officers for the ensuing year: Messrs. Harry H. James, Seattle, president; Clayton D. Wilson, first vice-president; Julius A. Zittel, Spokane, second vice-president; Watson Vernon, Aberdeen, third vice-president; Richard V. Gough, Okanogan, fourth vice-president; Edgar Blair, Seattle, secretary; L. L. Mendel, Seattle, treasurer; trustees: Harry H. James, Frank Fowler, A. Warren Gould, William J. Jones, R. Hamilton Rowe, all of Seattle.

## Annual Convention Washington Chapter, A. I. A.

The annual convention of the Washington Chapter was held on the afternoon and evening of January 10, at the Hotel Washington, Seattle. Delegates from various sections of the state of Washington were present. During the afternoon election of officers took place. A banquet was held in the evening at the Hotel Washington and was followed by addresses from prominent members of the profession. A play dramatized by Mr. G. C. Field, and which is taken from the Saturday Evening Post with the title "Going After It," was presented.

## Film Exchange Building

Mr. Albert Schroepfer, is preparing plans for a three-story reinforced concrete film exchange building, to be erected at Golden Gate avenue and Leavenworth streets, San Francisco. Mr. Louis R. Lurie is the owner, and Mr. Lurie will also build a two-story concrete auto sales building on Washington street, near Van Ness avenue and a one-story concrete warehouse on Harrison street, facing Columbia Square. The last named building will be occupied by Holbrook, Merrill & Stetson. Messrs. Ward & Blohme are the architects.

# With the Architects

## Building Reports and Personal Mention of Interest to the Profession

### Office Buildings and Theatres

A. C. Blumenthal & Company, who will handle the leasing of the building to be erected at Market and Taylor streets, announce that Messrs. Ackerman & Harris, after a consultation with Mr. Thomas W. Lamb, the New York architect (representing Loew Incorporated), have selected Mr. G. Albert Lansburgh, San Francisco architect, to design the new theatre to be built at Market and Taylor streets, San Francisco.

In connection with the theatre there will be a seven-story office building on Market street, with a large frontage of stores on both Taylor and Market streets. This will bring the total investment up to $1,000,000.

Mr. Lansburgh states the theatre will have over three thousand seats, and that his instructions are to spare no expense in making it the finest play house in the United States.

The Ackerman-Harris-Loew interests will also build a 12-story office building and theatre at Seventh street and Broadway, Los Angeles, from plans to be prepared by Messrs. Reid Bros. and Weeks & Day, San Francisco architects.

### Architects' Chapter Elects Officers

Mr. Edwin Bergstrom has been elected president of the Southern California Chapter of the American Institute of Architects. The other officers are Mr. Henry F. Withey, vice-president; Mr. R. Germain Hubby, secretary; Mr. August Wackerbarth, treasurer, and Mr. A. M. Edelman, member of the board of directors.

The chapter decided to proceed with the institution of a program for the selection of the most notable examples of architecture in Los Angeles city and adjacent territory. A committee consisting of Messrs. A. F. Rosenheim, D. C. Allison and Alfred W. Rea, will report the details of the program at the next meeting.

### Antioch School Being Figured

Mr. W. H. Weeks, architect, 75 Post street, San Francisco, has completed plans for a one-story brick schoolhouse to be erected at Antioch, Contra Costa County, at an estimated cost of $90,000. Bids are to be received until January 31st.

### Likes San Francisco's Domestic Architecture

The possibility of the utilization of types of building and community planning carried out in St. Francis Wood in reconstruction work in France is the belief of Mr. Albert Ferran, former San Francisco architect, and who is now interesting himself in the rebuilding of France.

Mr. Ferran has returned for a visit to his old home after having served with the French army as Salonika since 1914. Prior to the outbreak of the war he was awarded the grand prix de Rome given by the French Government at the Ecole des Beaux Arts.

During his visit here he called on Mr. Henry H. Gutterson, supervising architect for the Mason-McDuffie Company. Together they visited St. Francis Wood. Mr. Ferran was greatly pleased with the character of the development work in this district.

Ferran is taking photographs of the work in St. Francis Wood back to France with him, as he believes that this district has much to offer in the way of suggestions for the rebuilding of France.

### $2,000,000 Memorial Building

Messrs. Glass & Butner who have offices in the Hearst building, San Francisco, and the Cory building, Fresno, have prepared preliminary plans for a Veterans' Memorial building to be erected in the San Francisco Civic Center, provided the necessary funds can be raised. About $2,000,000 is required and it is proposed to finance the project by the sale of stock.

### Designing Thirteen-Story Building

Mr. Lewis P. Hobart, Crocker building, San Francisco, is preparing plans for a thirteen-story Class "A" office building to be erected on the southwest corner of Montgomery and Bush streets, San Francisco, for the Crocker Estate Company. The structure will cost between $400,000 and $500,000.

### Concrete Swimming Pool

Plans have been drawn by Mr. Martin A. Sheldon, 110 Sutter street, San Francisco, for a municipal concrete swimming pool at Colusa. A bond issue of $40,000 has been authorized.

## American Institute of Architects

(ORGANIZED 1857)

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### Death of Harry L. Cunningham

The San Francisco architectural profession has lost a valued member in the recent death of Mr. Harry L. Cunningham, senior member of the firm of Cunningham & Politeo, with offices in the First National Bank building. Mr. Cunningham's health had been failing for some time and the end, which came at the Lane hospital, on December 10th, was not unexpected. He was born in Calcutta, India, and was 53 years of age.

He had resided in San Francisco for nearly a half century and had practiced his profession for the past 20 years. His work as a member of the firm of Cunningham & Politeo included the designing of a number of prominent San Francisco and Oakland structures, most of them in the Art Nouveau style, including the Arcadia Dancing Pavilion, the new Techau Tavern, the Alcazar and Imperial theatres, and the Hotel Stewart, all in San Francisco and the T. and D. theatre and the Arcadia Dancing Pavilion, the latter under construction at 14th and Franklin streets, Oakland.

### Death of Grant Fee

Mr. Grant Fee, a prominent contractor in San Francisco for more than fifteen years, died December 29 from a pistol shot supposed to have been exploded accidentally while he was cleaning the weapon in his office on Sixteenth street. Mr. Fee was found dead on the floor of his office by the post man. Mr. Fee was 50 years old and a Mason. His last large contract was the new Post Office Building in Portland, Oregon. Since the war Mr. Fee did very little figuring in the open market.

### Passing of Pioneer Architect

Mr. Emile John, 63 years old, pioneer San Francisco architect, and at one time prominently identified with the building industry, died December 27th at the family home, 2664 Bush street, after an illness of thirteen years.

### Opens New Offices

Mr. A. W. Burgren has opened offices at 661 Phelan building, San Francisco. Mr. Burgren has recently let a contract for a $20,000 reinforced concrete auto sales building to be built at 12th and Mission streets, San Francisco for the McKee Company. He has also prepared plans for altering three flats into twelve apartments at Clay and Larkin streets, San Francisco.

### Structural Steel Contract

The Central Iron Works, 631 Florida street, San Francisco, has been awarded the contract for furnishing the structural steel for a two-story and basement Class "A" addition to the First National Bank building on Montgomery street, near Post, San Francisco. Mr. C. E. Gottschalk, is the architect.

### American Society Civil Engineers

Installation of new officers elected by mail ballot took place at the annual meeting of the Southern California Association of Members of American Society of Civil Engineers. Mr. W. K. Barnard, of the firm of Leeds & Barnard, is the new president. Mr. H. W. Dennis, construction engineer of the Southern California Edison Co., was re-elected first vice-president, and Mr. R. J. Reed, chief engineer of the Union Oil Co., was elected second vice-president. Mr. Floyd G. Dessery, civil and hydraulic engineer, 511 Central building, was elected secretary, and Mr. Wilkie Woodard, civil and landscape engineer, 705 Grant building, is the new treasurer, succeeding Mr. Reed. The new board of directors consists of Messrs. W. K. Barnard, L. C. Hill, G. G. Anderson, R. J. Reed, Wilkie Woodard and F. G. Dessery.

### Personal

Mr. O. P. Dennis has opened an office in room 322 Markham building, 6372 Hollywood Boulevard, Los Angeles.

Mr. G. E. Griewank, structural engineer, has opened offices at 516 Call-Post building, San Francisco.

Mr. Richard C. Farrell, who has been practicing architecture in Long Beach, has opened an office at 532 Mason building, Los Angeles.

Mr. Walter Webber, has removed his architectural offices in Los Angeles from 718 Ferguson building to 1017 Hibernian building.

Messrs. Edward Cray Taylor and Ellis Wing Taylor, have moved their offices from 605 Merritt building, to larger quarters in suite 807 Merritt Building, Los Angeles.

Mr. J. Constantine Hillman of Pasadena, who has been away for some time attending to outside work, has returned and established an office in the Central Building, Pasadena.

Mr. Edgar H. Cline, who served two years as captain in the construction division of the quartermaster's department, U. S. A., has returned to Los Angeles and resumed the practice of architecture with office at 446 Douglas Building.

Messrs. Houghtaling & Dougan, architects, who have maintained offices in the Henry building, Portland, Oregon, for some time, have had new offices and a studio fitted up on the second floor of the Elks' Club building, Portland. They are now prepared to receive catalogues and literature to complete their files.

Mr. Andrew C. P. Willatzen, architect, with offices in the Boston building, Seattle, recently spent two months in the East studying various types of new structures. He visited Chicago, New York, Philadelphia, Boston, Washington, D. C., Kansas City, St. Louis, New Orleans and Savannah.

### Architect Knoll Busy

Mr. A. H. Knoll, Hearst building, San Francisco, is preparing plans for a two-story brick auto accessories building to cost $40,000 and to be built at Chatham Place and Bush street, San Francisco, for Mr. M. S. Show. Mr. Knoll has also made plans for alterations to the three-story and basement store and loft building on Market street, between Second and New Montgomery streets, San Francisco, for the Eisenbach Company, to cost $20,000.

### $15.00 a Day for Plumbers

That the agreement between the boss plumbers and the plumbers' union to add $1 a day to plumbing charges, making the bill to the public $15 a day, will prevent at least $1,000,000 worth of building contemplated for 1920 in Butte was the conclusion reached at a conference which included bankers, real estate men, investors and representatives of the Employers' Association.

### A Coney Island at Del Monte

A miniature Coney Island is to be established at Del Monte. Plans for extensions to the pier, a new bathhouse, some two hundred cottages and other improvements are being prepared by Mr. Paul A. Tuttle, 565 Lighthouse avenue, Pacific Grove. The enterprise is being promoted by the Del Monte Bathhouse Company of which Mr. H. J. Lugg, a New York capitalist, is president.

### $60,000 Country House

A country ranch house that will cost probably $60,000 and will have at least fifteen rooms, six baths and other modern conveniences, is being designed by Mr. B. G. McDougall, architect in the Marston building, San Francisco, for Mr. Louis Titus. The house will be built on the Titus ranch, nine miles from Livingston, Merced county.

### Pittsburg Municipal Improvements

The voters of Pittsburg, Contra Costa County, have authorized a bond issue of $400,000 for civic improvements, including street paving, water works, fire apparatus, sewer system, new town hall and library building.

### $100,000 Los Angeles Hospital

Chas. W. Kent & Sons, 131 South Grand Boulevard, Glendale, are preparing plans for a brick hospital to be erected in the Piedmont Park Tract, Glendale, for the Glendale Memorial Hospital Association. The first unit will cost $100,000.

### Million-Dollar Portland Cannery

The American Can Company will build a million-dollar cannery on an eight-acre tract at Wilson and 26th streets, Portland, Oregon. The company will also enlarge its Los Angeles and San Jose plants.

### Omitted Giving Credit

An article entitled "Should Architects Advertise?" was printed in this magazine in November and credit was inadvertently omitted. The editorial was taken from "Class," published in Chicago by Mr. G. D. Crain, Jr. The publishers of The Architect and Engineer are very glad, indeed, to give "Class" the proper credit and regret exceedingly the omission of the name at the time of publication.

### Large Fresno Apartment House

Plans are being prepared by Messrs. Glass & Butner, Hearst building, San Francisco, and Cory building, Fresno, for a four-story concrete and brick apartment house to be built at Kern & "N" streets, Fresno, for Mr. J. Crick, of the Crick Automotives Company, 1100 Van Ness avenue, San Francisco. Approximately $200,000 will be expended on the improvements.

### Open for Employment

Structural Engineer, Associated Member American Society Civil Engineers; 12 years' experience. Superintendence and design. Reinforced concrete specialist. Has had excellent experience relative to economics of building construction. Highest references furnished. Address, R. McC. B., care Architect and Engineer, San Francisco.

### Cupertino High School

Plans are being prepared by Mr. Chas. S. McKenzie, Bank of San Jose building, San Jose, for a one-story frame and plaster school building to contain ten classrooms and an assembly hall and to be built on the Stevens Creek Road, San Jose, for the Cupertino High School. Bonds amounting to $75,000 have been voted and sold.

### To Improve Chico School Site

The landscape gardening for Chico's new $425,000 high school, which will occupy fifty-three acres, will be in charge of Mr. J. W. Gregg, landscape gardener of the University of California. Messrs. Woollett & Lamb of Sacramento are the architects.

### Builders' Convention

The Northwest Builders' Association will hold its next convention in Portland, Oregon, February 26, 27, 28.

### Business Trip

Mr. Carl F. Gould of the architectural firm of Charles H. Bebb and Carl F. Gould, Securities building, Seattle, recently returned from a business trip to New York City.

### Architect Wants Position

First class architect and structural engineer, several years experience in largest cities would like to associate himself with some reliable architect or structural engineer on salary and commission basis, with idea in view of partnership if arrangement proves satisfactory. Address, "Architect," this office.

### Los Angeles Chapter, American Association of Engineers

First steps toward completing the amalgamation of the Engineers and Architects' Association of Southern California with the American Association of Engineers were taken at a joint meeting of the officers and directors of the E. and A. and the original Los Angeles Chapter, A. A. E., at a meeting held on November 21. The executive officers of the Los Angeles chapter tendered their resignations and the following officers of the E. and A. were elected to serve for the Engineers and Architects' Association, Los Angeles Chapter, American Association of Engineers, as the amalgamated society will be known, until the annual meeting in January: President, Mr. H. Z. Osborne, Jr.; first vice-president, Mr. J. J. Backus, and second vice-president, Mr. H. L. Smith. President Osborne is chief engineer of the Los Angeles board of public utilities and Vice-President Backus is chief building inspector of Los Angeles. Mr. Roland H. Holbrook was chosen acting secretary, the secretaries of both the original organizations having tendered their resignations. The directors of the original Los Angeles Chapter, A. A. E., were elected as directors of the amalgamated society. They are Messrs. Roland H. Holbrook, E. E. Glass, F. C. McMillan and A. J. Ford. An advisory board was chosen consisting of the retiring executive officers of Los Angeles Chapter: Messrs. E. G. Sheibley, C. W. Lawrence, A. L. Harris and E. H. Merrill, and the retiring directors of the E. and A.: Messrs. A. B. Benton, G. E. Bergstrom, A. H. Koebig and Geo. P. Robinson.

Permanent headquarters for the Engineers and Architects' Association, Los Angeles Chapter, American Association of Engineers, have been opened in the Metropolitan building, Los Angeles. It is the purpose of the organization to have these headquarters open at all times with some one in charge. An effort will be made to increase the membership of the chapter to 1000.

Present indications are that practically all the members of the Engineers and Architects' Association will become members of the new organization. Many of the most prominent engineers on its rolls have already sent in their applications. The new organization promises to be an active and influential factor in engineering affairs.

### Engineers Elect Officers

At the regular bi-monthly meeting of the San Francisco Association of Members of the American Society of Civil Engineers, held at the Engineers' Club on December 16, the following officers were elected for the ensuing year: President, Mr. M. M. O'Shaughnessy; first vice-president, Mr. W. L. Huber; second vice-president, Mr. F. R. Muhs; secretary and treasurer, Mr. N. A. Bowers holds over for the coming year. The above officers, together with Mr. E. J. Schneider, constitute the Board of Directors.

The paper of the evening, on the construction of the Pearl Harbor drydock, was presented by Mr. Francis B. Smith, who had charge of the work for the San Francisco Bridge Co., the contractors.

### Mr. Alden Resumes Practice

Mr. Charles H. Alden, F. A. I. A., for a considerable period prior to the war, practicing architecture in Seattle, and well known to California architects on account of his work for the Panama-Pacific Exposition Company in 1915, has returned from service in the army, and is at his office, 400 Boston building, Seattle.

Mr. Alden was commissioned captain in the Quartermasters' Reserve Corps the summer of 1917, and prior to being called into active service was engaged to assist the constructing quartermaster at Camp Lewis, as architect and to supervise the building construction, serving in this capacity from the time active construction was started until the completion of the camp. He was called into service in his military capacity October 16, 1917, and attached to the 86th division at Camp Grant, Illinois. After a brief period as supply officer at this camp, he was made officer in charge of construction and repair of the quartermaster depot at Boston and had charge of various building projects to increase the warehouse space and improve and maintain the facilities for active operation.

Captain Alden was ordered overseas in September, 1918, and was sent to the front as assistant to the chief quartermaster of the 6th army corps. After the armistice he was placed under the division of construction and forestry, was ordered to Le Mans with assignment to the 122nd engineers to assist in the necessary construction operations to make the Le Mans area the American embarkation center. This comprised the building of large camps and other construction to care for the troops returning from the front en route to the ports of embarkation.

After the embarkation center ceased to function on account of the departure of the troops from France, Captain Alden was retained to turn over the buildings to the French government. He returned to this country the latter part of August and was discharged from the service at Camp Dix early in September.

### Ventura City Hall

Mr. Alfred F. Priest, 615 Fay building, Los Angeles, is preparing plans for a city hall and public library for Ventura. It will cost $50,000.

## Unique Christmas Card

Mr. Thomas B. Wiseman, architect of Bakersfield, and who is now associated with Mr. Chas. H. Biggar, under the firm name of Wiseman & Biggar, favored his friends with a unique and happy Christmas greeting of which the following is a facsimile:

BAKERZFIELD CAL
DECEMBER-1919

DEER FRENO·

MY DADDY IZ AN ARCHITECT, AND LAZT NITE WHEN I WAZ MOZT AZLEEP· I HERD HIM TALKIN TO MA BOUT YOU. HE ZED YOU WAZ ONE OF HIZ FRENDZ AND HE WAZ FRAID ON COUNT OF BEING ZO BIZY HE COULD NOT RITE YOU AZ PER UZUAL ZPREZZING HIZ GRATITUDE FOR YOUR GOODWILL TORD HIM THIZ YEAR AND HE WAZ REEL WORRIED· ZO I THOT I WOOD RITE AND ZPLAIN THE REZON FOR YOUR BEING NEGLECTED THIZ YEAR· FOR I KNO DADZ FRENDZ WOOD WUNDER COZ DAD TRYZ TO CHEER ALL HIZ FRENDZ UP BOUT THIZ TIME OF ZEZON· OR ZEZON OF GLADNEZZ, AZ HE CALLZ IT.

DADZ ALWAYZ HAPPY AND ZEZ FEW PEEPLE KNO THE MAGIC OF A ZMILE AND THE HAPPYNEZZ IT BRINGZ.

DAD ZEZ WE CANT ALL B HANZOME AND ITZ HARD FOR ALL TO B GOOD· WE ZURE NOW AND THEN R LONLY AND WE DONT ALWAYZ DO AZ WE ZHUD· TO B PAZ HENT AINT ALWAYZ EZY· ETHER· TO B CHEERFUL IZ HARDER YET· BUT AT LEAZT WE CAN ALWAYZ B PLEZANT IF WE ONLY MAKE UP OUR MIND· YOU CAN BET· AND IT PAYZ EVERY TIME TO B KINDLY· EVEN IF YOU FEEL WORRED AND BLUE· IF YOU ZMILE AT THE WORLD AND B CHEERFUL· THE WORLD WILL ZMILE BACK AT YOU

YOURZ TRULEY
THOZ. B. WIZEMAN II

P.Z. MY DADDYZ NAME IZ ZAME AZ MINE· AND I KNO HE WIZHEZ YOU A MERRY CHRIZTMAZ AND A HAPPY· HELTHY AND PROZPERUZ NEW YEAR· ZAME AZ I DO.

## This Is What the Carpenter Said He Heard

"It is 'plane' that I love you," he began.

"Is that on the 'level'?" she asked.

"Haven't I always been on the 'square' with you?" he urged.

"But you have so many 'vices'," she remonstrated.

"Not a 'bit' of it," he asserted.

"What made you 'brace' up?" she queried, coquettishly.

"The fact that I 'saw' you," he replied, with a bow.

"I ought to 'hammer' you for that," she answered, saucily.

"Come and sit by me on the 'bench'," he urged.

"Suppose the others should 'file' in?" she demurred.

"Let me 'clamp' you to my heart," he pleaded.

"You shouldn't let your arms 'compass' me," she requested.

"I know a preacher who's a good 'joiner'," he suggested.

"Promise not to 'chisel' him out of his fee," she requested.

"That wouldn't 'auger' well for us," he answered.

"Shall I wear my 'blue print'?" she asked as they departed for the license.—St. Louis Globe-Democrat.

## Suggestions for Contractors on Concrete Road Construction

(Continued from November issue.)

The hose for wetting down the concrete usually is 1-inch size, as it is easy to drag around. The inserts are made by using a 1-inch nipple, then a 1-inch square-head cock, and then another 1-inch short nipple. About a dozen of these inserts should be provided, and they should be moved from place to place as the progress of the work requires.

*Pipe Line.*—In laying the pipe line eliminate sharp sags and raises as much as possible, for air pockets at the high points will cause much trouble. If an extra tee is placed at each high point, a nipple inserted and a valve attached, the air pockets can be blown off readily. Provide a similar outlet at all low spots in order that the pipe may be drained if occasion requires.

Two men can lay 1,500 to 2,000 feet of good pipe a day.

If the size of the job warrants it a blacksmith shop will save considerable time. Provide it with a blacksmith's outfit, a strong bench vise, a drill press, and a supply of various sizes of round and flat iron.

Use white lead or a mixture of graphite and machine oil for connecting pipe line. Machine oil is preferable if the pipe is to be taken apart frequently.

When a split or a leak occurs in the pipe line mark it with red lead, so that it will be noticed, and cut out the defective section before laying the pipe again.

Provide a good grade of 1-inch hose for general use on the work.

*Tools and Supplies for Repair Work.*—The following list of tools and supplies are recommended for repair work on the concrete mixer and pipe line:

Hinge pipe vise and bench (light and movable).

Pipe cutter, pipe dies, and holder.

Breast drill, with assortment of bits.

Cold cutters, cold chisels, and hacksaws.

Wrenches—monkey, Stillson, Westcotts, open-end, etc.

Hose menders and couplings.

Pliers and end-cutting nippers.

Rubber packing, electric tape, and candle wicking.

Assortment of carriage and machine bolts.

Extra supply of valves, tees, ells, unions, couplings, nipples, plugs, and reducers.

Rolls of 18-gauge wire for bundling cement sacks.

WANTED.—Three copies of The Architect and Engineer, date of September, 1917. Will pay 35c. per copy. This office.

When business is good advertising is an opportunity. When business is bad advertising is a necessity.

## Manufacturers Catalogues

THE STANLEY WORKS, New Britain, Conn. "Wrought Steel Garage Hardware for Rolling Doors" (6x9 ins.). 16 pp.

This catalog tells you all about Stanley garage hardware for rolling doors, and should prove a helpful guide to anyone selecting hardware for a new garage, or any entrance that may require the services of rolling doors. There are a number of half tone plates, outline drawings and complete instructions for setting up the hangers, including the new No. 2525 hanger.

THE STANLEY WORKS, New Britain, Conn. "Buildings You Have Seen" (4½x6 ins.). 32 pp.

Some strikingly handsome half tone plates of pretentious buildings throughout the United States are shown for the purpose of impressing upon the reader the fact that Stanley hardware is used from Coast to Coast in some of the country's most notable structures. From the smallest cottage to the largest railroad station in the world, Stanley Works' hardware is installed, "with equal assurance," says the author of this book, "that in the years to come this hardware will retain its initial quality, strength and service."

The doors of many of these buildings are in constant use and the strain, in some cases, is exceptionally severe, as indicated in the following letter from Mr. I. C. Frickstad of the Engineering Department of the Pacific Gas & Electric Company, San Francisco:

Pacific Gas and Electric Company
145 Sutter Street
San Francisco, California.

January 29, 1919.

John T. Rowntree, Inc.,
Monadnock building,
San Francisco, California.

Gentlemen:

It might interest you to know that the Number 851, Ball Bearing, 8" x 10" plain steel butts with which we hung extra heavy doors in our Electric Sub-Station "E" in San Francisco are today swinging as easily and true as the day they were hung, which was a little over a year ago.

I might add for your information that owing to the requirements of all interests considered it was necessary to construct doors which were 6' wide by 10' 6" high by 7¼" thick and weighing approximately 1500 pounds, which are hung with three butts per door, iron plates and straps were bolted in the door while under construction to which the butts were fastened, the jamb of the door is also of iron.

These doors are in constant use and at the present time are the only ones giving real satisfaction.

Yours very truly,
IVON C. FRICKSTAD,
Architectural Assistant.

S. F. BOWSER & CO., INC., Fort Wayne, Ind. "How Bowser Equipments Save Oil-Time-Money."

Quite the neatest little folder we have seen in some time. It is devoted to a brief but very illuminating description of the Bowser Battery Storage System for Lubricating oils, and if brevity be indeed the soul of wit the compiler of this little folder has succeeded admirably in being most witty.

On the side of the folder opposite that containing the text matter a picture of a battery of Bowser storage tanks has been printed and this picture has been so ingeniously arranged that it has been found possible to so fold the folder that a person interested may readily see just how a single tank or a double tank or a battery of four tanks would look when set up. This picture also serves to inform the prospective purchaser that he can purchase either a single unit or a whole battery of tanks and how they can be lined up in a uniform manner.

To persons interested in storing lubricating oil the folder has a real value and those who are interested are advised that they may obtain a folder by merely sending a postal card of request to S. F. Bowser & Company, Inc., Fort Wayne, Indiana.

## Tribute to a Fresno Architect

In its issue of October 3rd the Fresno Republican publishes the following article:

Of wide interest in architectural circles, not only in Fresno, but throughout the state, comes the announcement that Mr. Edwin Glass of Glass & Butner, has been named as a member of the State Board of Architects. The appointment is one which will meet with the approval of architects of the Fresno district not only on account of Mr. Glass' personality but because it gives Fresno, now one of the busiest building centers on the Pacific Coast, representation on the State Board.

Although in point of age he is the junior of other members of the board, being only 33 years old, Mr. Glass has been connected with several of the best offices of the country before entering business here, and takes with him to membership on the state board both a broad technical training and large practical experience.

Mr. Glass graduated from the University of Pennsylvania, department of architecture, in 1912. He supplemented his university training with practical experience in the offices of various architects in Philadelphia, beginning as draughtsman, and working on the staff of Heacock & Hokinson, and Mills & Bonkirk, having complete charge of the latter office. In 1913 Mr. Glass came back to the Pacific Coast, and entered the office of August Denke, in San Francisco, following this by connection with Smith & Stewart. The following year Smith & Stewart sent him to Fresno to take charge of important work that the firm had secured here.

In 1914 Mr. Glass took the examination before the California examining board of architects, incidentally passing the tests with the highest mark of the year. Soon afterwards he opened offices in Fresno with Charles Butner as partner under the firm name of Glass & Butner. The partners had been classmates at the University of Pennsylvania, and had agreed that as soon as their preliminary experience had been gained they would join efforts in one firm.

Among the more important buildings which brought recognition to the new appointee of the state board and his partner was the tubercular building of the Fresno County Hospital which is generally recognized as one of the best of its kind known. The plans as developed by the Fresno architects have been adopted as standard by the state board of health and the publication of these plans by the state board attracted the attention of the United States Department of the Interior, which only recently notified Glass & Butner that it desired to adopt these plans as standard type for government tubercular institutions.

## Recent Tuec Installations

Recent installations of Tuec vacuum cleaners made through the local distributors—the San Francisco Compressed Air & Cleaning Company, include a Tuec swimming pool outfit for the Y. M. C. A. at Vallejo and replacing a cleaner of obsolete type in the Fireman's Fund building at California and Sansome streets, San Francisco.

## Bank Buildings

Mr. Frederick H. Meyer, architect in the Bankers' Investment building, San Francisco, is designing three bank buildings to cost approximately $100,000 each. They will be erected in Healdsburg, Chico and Red Bluff.

## Advantages of the Diffuselite Fixture for Correct Lighting

By WOODRUFF SUTTON

THE Diffuselite System of The J. G. Wilson Corporation must be stamped as a decided advance in correct lighting.

For forty odd years this company has been the manufacturers of Louvre Blinds of the Venetian type. Recently a radical change took place. The blind was transformed from a shading device to a light-diffusing fixture. This change was brought about through the study of light effects from color combinations.

It had been found that when a strong natural light was thrown on a white, highly polished surface, and deflected from there to a flat finished surface of a certain shade of soft green, the result was a very high quality of light, perfectly diffused, and of a color most restful to the eye. This led to the painting of the louvres of the Wilson Blind with a white enamel surface on the outside or window side and a soft, flat neutral green on the inside, or room side.

After so painting, comparative tests with fabric shades and fabric awnings were instituted, for the purpose of ascertaining the quantity, quality and color of light which occurred through each installation. It was found that under exactly similar conditions, the blinds passed five times more light than was passed by either fabric shades or fabric awnings, and that the light so passed was perfectly diffused throughout the room, without lines of demarkation, strong glares, or brightness contrasts showing.

To acquire a perfect working condition, the louvres were adjusted so that all light passed would be thrown to the ceiling, from there to reflect down upon the work surface. Unfortunately, due to lack of recognition of the value of ceiling and side walls as reflecting surfaces, many instances occurred where light quantity in rooms differed materially, on account of the many different grades and classes of paint used on walls and ceiling.

The J. G. Wilson Corporation therefore made tests for a ceiling paint which would resent a flat white, opaque surface, and show a high coefficient of reflection, the neutral flat green tint used on the inside of the blind, being suitable for the side walls. These tests led to the discovery of Diffuselite flat white, which showed an initial and practically permanent coefficient of reflection of 78% (the standard being 88%). A room was then treated with Diffuselite white on the ceiling and the Diffuselite green on the side walls. Photometer readings were made and it was found that under such a condition, light quantity was materially increased and the light quality was such that an absolutely normal condition for the eye and the entire nervous system occurred.

During this investigation several indirect lighting fixtures which demanded a high reflecting surface on the ceiling were placed on the market. The same inequality appeared in similar rooms as appeared where the blinds were installed, with non-uniform painting.

As both blind and fixture depended upon the reflecting value of side walls and ceilings, The J. G. Wilson Corporation decided to develop an indirect lighting fixture of its own which could be used in combination with the blind. This was accomplished through its engineering department, as one of their illuminating engineers had been instrumental in bringing out the several artificial lighting fixtures accepted as standard.

The Diffuselite fixture was designed. The next step was to acquire the same light quality and color from artificial sources which was acquired from natural sources through using the blinds. A C-2 nitrogen lamp was tried—with the gratifying result that the same quality and color of light can be found both day and night in an office where the Diffuselite system is installed, and natural light reinforcement through artificial sources is such that as daylight fades there is no difference in light values, and gradual change from day to night is not noticeable.

In rooms treated with the Diffuselite system it will be found that either by day or night the ratio between the lightest and darkest parts of the room never exceeds 1 to 60. It will also be found that lines of demarkation, brightness contrasts, specular reflection and shadows will not appear. In other words, for the first time in the history of proper lighting, every defect heretofore appearing, disappears.

In order to round out the Diffuselite system so that all accessories for proper lighting could be co-ordinated, under one head, The Wilson Corporation decided to construct a double-hung window, which would be an improvement on any double-hung window already on the market. This has been accomplished.

The principal reason for this step was on account of proper glazing, although one primary reason was the possibility of taking contracts for window frame and sash with Diffuselite blind attached, and so reducing initial cost for installation of both commodities.

The question of glazing arose through an acquired knowledge that a certain ribbed glass could be constructed that would pass more light into a room without glare, than could be passed in by the usually adopted glass, and that light generated in a room could not escape as readily to the outside. Tests have proven this, with the result that glazing now en-

(Concluded on page 135)

# The Contractor

BUILDING CONSTRUCTION, BRIDGES AND ROAD WORK

## Completed Ridge Route Now Open to Traffic

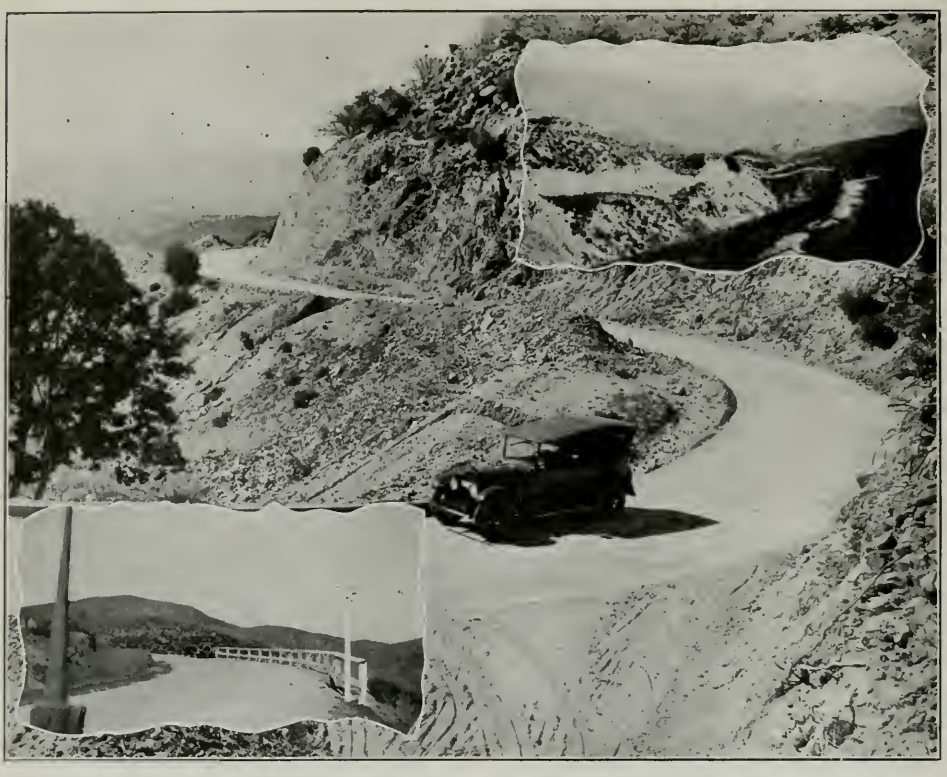
ON November 15th the Ridge Route, in Southern California, and a connecting link of the State highway, was permanently thrown open to traffic paved with 4½ inches of 20-ft. wide concrete throughout its entire length with the exception of a gap of about ten miles between Lebec and Rose Station in the northern part of Los Angeles county. This gap is, however, by-passed by a passable though rather dangerous detour which does not seriously interfere with travel.

This highway was determined upon as the most feasible direct route from Los Angeles to Bakersfield for the inland trunk line between the southern and northern part of the state. It was a daring conception both from engineering and political standpoints, winding as it does for some thirty miles through the most rugged of isolated mountainous territory, heretofore virtually without even trails, and because of thus abandoning the old-traveled route through a somewhat settled territory arousing bitter opposition from politically-powerful interests who sought to have this trunk line follow the old but longer route, says the Southwest Contractor and Builder, to whom we are indebted for the accompanying illustrations.

The Ridge Route forms the most direct highway between Los Angeles and Bakersfield, bringing these two cities within 126 miles of each other. It saves some twenty-two miles over the Bouquet Canyon highway, heretofore the shortest route, and fifty-eight miles over the Tehachapi-Mojave Desert route. The highway commission took the stand that this saving in distance, with the resultant saving in time and cost to the traveling public, justified the selection of this new and costly highway.

The Ridge Route has given to California's system of state highways one of its best scenic stretches of road. Starting upwards into rugged mountains from a point near Castiac School forty-three miles north of Los Angeles, at an elevation of 1150 feet, the highway follows a tortuous ascending grade for twenty-six miles to the summit at Liebre Mountain

Typical of the Numerous Curves Predominating on the Ridge Route



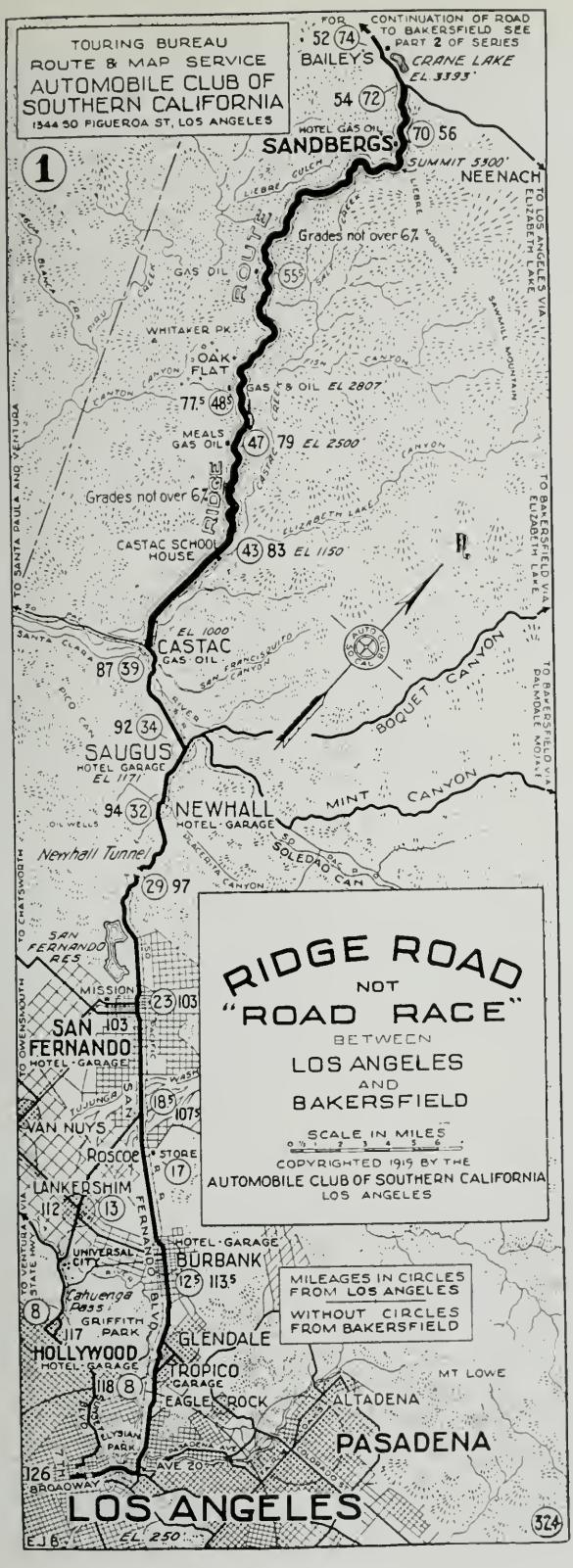
Three Ridge Route Curves. At the Most Dangerous Turns a Curve Such as the Above is "Daylighted" by Still Further Cutting Away of Right-hand Bank

at an elevation of 5300 feet, a total rise of 3150 feet. It descends on the northern side of the Tehachapi mountains almost an equal distance to the 1100-ft. elevation of the valley in which Bakersfield is located. Yet notwithstanding the increase in elevation and mountainous territory through which the highway is taken, there is no grade in excess of 6%. The surveying parties of the highway commission spent eighteen months in laying out the highway.

Construction work on the Ridge Route was started in 1914. The forty miles of heavy construction between Castiac School and the Los Angeles-Kern counties boundary was divided into three contracts, Section B of Route 4 carrying the highway from Castiac School a distance of 12.8 miles to a point halfway to the summit; Section C taking it on from this point 14½ miles farther to the summit at Liebre mountain, and Section D carrying it on the remaining 12.7 miles to the Kern county southerly boundary.

These three contracts, comprising chiefly grading, aggregated $557,823.20. Section B was let to Mahoney Bros., railroad contractors of San Francisco, the second lowest bidders, and the other two contracts were executed by Lee Moor Contracting Co., railroad and grading contractors of El Paso, Texas.

Section D was the first to be started. Bids on this contract of 12.7 miles were opened on May 25, 1914, the bid of Lee Moor Contracting Co. being the lowest at $153,019.10 or $48,000 under the estimate. This contract involved some 80,590 cubic yards of ordinary excavation, 10,540 cubic yards of loose rock, laying 3934 feet of corrugated iron culvert pipe, 1030 cubic yards of concrete in culverts and monuments, 10,200 cubic yards of concrete paving, 1285 cubic yards of dry rubble in retaining walls, 13,010 feet of guard rail and hauling and setting 444 monuments. There were six bids, four being well under the engineer's estimate of $202 366.81. The successful bidder priced ordinary excavation at 40c. yard, loose rock at 65c. yard, and solid rock at 70c. yard, the average of the six bids were 48c. for ordinary, 76c. for loose rock and 91½c. for solid rock, as against the engineer's estimate of 30c. for ordinary, 55c. for loose rock and 90c. for solid rock. The successful bidder priced 740 cubic yards of Class A concrete in culverts at $12.75 yard, 10,200 cubic yards of Class B concrete in paving at $6.00 yard, and 1285 cubic yards dry rubble in retaining wall at $3.00. These unit prices




on paving and dry rubble were 30c. and 50c. yard, respectively, under the estimate.

On Section B, from Castiac School 12.8 miles north there was a total of 242,360 cubic yards of excavation. The highway commission had now abandoned any attempt at classification. Of the eleven bids received for this contract on August 31, 1914, the lowest price offered was 37c. yard as against an average of 55c. yard, and an estimate of 60c. The contract was let to the second lowest bidder, Mahoney Bros., at $123,158.10 or $70,618.83 under the engineer's estimate, which included 15% for contingencies. Nine of the eleven bids were under the estimate.

Bids on Section C, the heaviest of the three contracts and which comprised 635,000 cubic yards of unclassified excavation in its 14½ miles of length, were opened on December 14, 1914. Proposals were asked on three time limits, 150 days, 250 days and 450 days. Six bidders made tenders on the shortest time limit, as against ten on the longest time limit of 450 days. Lee Moor Contracting Co., which had work well under way on its contract immediately adjoining this section on the north, was the lowest on each time limit, beating the engineer's estimate in each instance by about $121,000. His totals were: $281,646, $268,946 and $256,246; the engineer's corresponding estimated totals, including 15% for contingencies, were $402,977.25, $381,069.75, and $373,767.25. The prices for excavation of the successful bidder and the estimate were respectively 41c. and 48c. for 150 days, 39c. and 45c. for 250 days, and 37c. and 44c. for 450 days. There being only $25,400 difference in the totals of the lowest bidder for the shorter or longer time limits the highway commission lost no time in awarding the contract on the 150 days basis.

These three contracts involved a total of 1,010,610 cubic yards of excavation in the 40 miles of highway, according to the engineer's original estimates, for which the commission paid out $430,712.20. The prices offered by the contractors were of course based on

pre-war costs and were made, too, at a time when competition was keenest among the contractors—before the majority of them had learned how hazardous this class of contracting really was.

Following its original plan of opening the Ridge Route to travel before paving, in order to give the many deep fills time to settle, the highway was opened in October, 1915, and traffic used it with more or less interruption until February, 1919, when it was closed to complete the paving program.

On December 31, 1917, the highway commission received one bid in answer to its advertisement for proposals to pave all three sections. Fred Hoffman of Long Beach offered to lay the 33,600 cubic yards of Class A concrete pavement and build the culverts and retaining walls involving an additional 300 yards, at $16.70 cubic yard, or a total of $575,130, the contract to be completed by January 1, 1920. The engineer's estimate for this work at that time was $378,879, including an allowance for contingencies, the engineer's unit estimates being $8.00 cubic yard for 9000 cubic yards of concrete with aggregate secured from northerly sources, $10.00 yard for 24,600 yards of concrete with an aggregate secured from southerly sources, and $15.00 yard for the concrete in culverts and retaining walls. A contract was not entered into and it is doubtful if under the war conditions of 1918 it would have been possible to execute it.

At the beginning of 1919 the highway commission decided to go ahead with the paving itself, closing the highways to traffic in February. The commission claims to have done the paving at a cost slightly in excess of $700,000, and it estimates this figure is $100,000 below that at which it could have had it done by contract, although no bids were asked from contractors since December 31, 1917.

The concrete pavement is 20 feet in width and 4½ inches in thickness. On the fills it has been reinforced with twisted steel bars laid 18 inches apart transversely and bound together at each end with longitudinal bars. Along some of the dangerous stretches where it is difficult to anchor guard rail, traffic is protected by concrete curbs. The sharp curves are banked and the highway commission has spent considerable money in reducing many of the slopes at dangerous turns, thus "daylighting" them to further eliminate the possibility of accidents.

The Ridge Route along that portion at high elevation, is subject during the winter time to snows and ice, thus increasing the danger to traffic beyond that due to its many sharp curves. The possibilities of accident are so great that a speed of fifteen miles has been set and the county traffic officers expect to enforce this speed limit rigorously.

SHEET METAL WORK

For Buildings—

Gutters, Ventilators, Metal Covered Doors, Skylights, Roofing, Tanks.

For Mills and Factories—

Dust Collector Systems, Air and Blow Pipes, Exhaust Hoods and Pipe, Smoke Stacks, Hoppers, Bins, Chutes, Metal Covered Shutters, etc.

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SHEET METAL WORKS

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Telephone Douglas 1558 San Francisco

HARDWOOD HEADQUARTERS

ASH-BASSWOOD-BIRCH
AROMATIC RED CEDAR
COTTONWOOD-ELM-HOLLY
SOUTHERN RED GUM
HICKORY-LAUREL-MAPLE
OREGON MAPLE-PLAIN OAK
-QUARTERED OAK-
WYBROCK BENDING OAK
POPLAR--WALNUT

BOXWOOD-EBONY-IRONBARK
JEWISERO-KOA-SPANISH CEDAR
LIGNUMVITAE-MAHOGANY
ROSEWOOD-TEAK-RED BEAN
SPOTTED GUM-CIRCASSIAN WALNUT
LUMBER--TIMBER
HARDWOOD FLOORING
WYBRO VENEERED PANELS
DOWELS-TREENAILS-VENEERS

WHITE BROTHERS

FIFTH and BRANNAN STREETS SAN FRANCISCO, CAL.

# Present Cost of Building Materials

## With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, January 20, 1920. All prices f. o. b. San Francisco.

**Note.**—For country work add freight and cartage to prices given.

**Bond**—1½% amount of contract.

**Brickwork**—
Common, $35.00 per 1000 laid.
Face, $80.00 per 1000 laid.
Common, f. o. b. cars, $15.00.
Face, f. o. b. cars, $47.50.
Terra Cotta Tile Partitions—
12x12x2 in., 18c. per square foot
12x12x3 in., 21c. per square foot.
12x12x4 in., 25c. per square foot.
12x12x6 in., 30c. per square foot.
Hod carriers, $7.00 per day.
Bricklayers, $9.00 per day.

**Composition Floors**—30c. per sq. ft.

**Concrete Work** (material at bunkers)—

| | |
|---|---|
| No. 3 rock | $2.00 per yd. |
| No. 4 rock | 2.10 per yd. |
| Niles pea gravel | 2.10 per yd. |
| Niles gravel | 2.10 per yd. |
| Niles top gravel | 2.00 per yd. |
| City gravel | 1.75 per yd. |
| River sand | 1.25 per yd. |
| Bank sand | .75 per yd. |
| Monterey sand | 60c. per sack |
| Cement (F. O. B. cars) | $3.63 per bbl. |

Rebate for sacks, 25c. each.

| | |
|---|---|
| Atlas "White" | $9.50 per bbl. |
| Medusa cement | 9.50 per bbl. |
| Forms | $60.00 per M |

Wage—

| | |
|---|---|
| Laborers | $6.00 per day |
| Concrete workers | 7.00 per day |
| Cement finishers | 8.00 per day |

**Dampproofing**—
Two-coat work, 30c. per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $6.00 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $9.00 per day.

**Electric Wiring**—$8.00 to $15.00 per outlet.
WAGE—Electricians, $8.50 per day.

**Elevators**—
Prices vary according to capacity, speed and type. Consult elevator companies.

**Excavation**—
$2.00 per yard.
Teams, $12.00 per day.
Trucks, $30.00 to $40.00 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

**Fire Escapes**—
Ten-foot balcony, with stairs, $100.00 per balcony.
Cost of ornamental iron, cast iron, etc., depends on design.

**Glass**—
21 ounce, 25c. per square foot.
Plate, 83c. to $1.30 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 40c. per square foot.
**Note.**—Add extra for setting.
WAGE—Glaziers, $8.00 per day.

**Lumber**—
Common (at building), $54.00 per 1000.
Flooring—

| | |
|---|---|
| 1x3 No. 1 | $115.00 per 1000 |
| 1x3 No. 2 | 107.00 per 1000 |
| 1x4 No. 1 | 110.00 per 1000 |
| 1x4 No. 2 | 107.00 per 1000 |
| 1x4 No. 3 | 100.00 per 1000 |
| 1x6 No. 1 | 115.00 per 1000 |
| 1x6 No. 2 | 112.00 per 1000 |
| 1¼x4 and 6 No. 1 | 115.00 per 1000 |
| 1¼x4 and 6 No. 2 | 110.00 per 1000 |
| Slash grain, 1x4 No. 1 | 89.00 per 1000 |
| Slash grain, 1x4 No. 3 | 84.00 per 1000 |
| No. 1 common run to T. & G. | 67.00 per 1000 |
| Lath | 17.50 per 1000 |

Shingles—

| | |
|---|---|
| Redwood, No. 1 | $1.60 per bdle. |
| No. 2 | 1.50 per bdle. |
| Red cedar | 1.85 per bdle. |

(Add cartage to above)

Hardwood Lumber— Per ft.

| | |
|---|---|
| 1" FAS Ash | 30c. |
| 1" FAS Birch | 26½c. |
| 1" FAS Southern Red Gum | 27c. |
| 1" FAS Jenisero (Genezero) | 20c. |
| 1" FAS Hawaiian Koa | 29c. |
| 1" FAS Mahogany | 40c. |
| 1" FAS Maple | 22c. |
| 1" FAS Plain Oak | 29c |
| 1" FAS Quartered Oak | 43c. |
| 1" FAS Walnut | 45c. |

(Above quotations at yard.)

Hardwood Floors—
Maple floor (laid and finished), 30c. per foot.
Factory grade floors (laid and finished), 26c. per foot.
Oak (quartered, finished), 45c. per foot.
Oak (clear), 32c. per foot.
Oak (select), 30c. per foot.
WAGE—Floor layers, $9.00 per day.

Hardwood Floors (Laid)—

| | |
|---|---|
| Clear plain oak, per sq. ft. | 33⅓c. |
| Select plain oak, per sq. ft. | 30c. |
| ⅞" x 2¼" T. & G. flooring, clear plain oak, per sq. ft. | 50c. |
| Clear, quarter sawed | 55c. |

**Hardwood Floors (not laid)—**

| | | Per M ft. |
|---|---|---|
| 13/16x2¼" face | Clear quartered oak | $445.00 |
| | Select quartered oak | 335.00 |
| | Clear plain oak | 325.00 |
| | Select plain oak | 290.00 |
| | Clear maple | 200.00 |
| | Clear maple—white | 230.00 |
| 13/16x3¼" face | Clear maple | 215.00 |
| 1⅛x2¼" face | Clear maple | 210.00 |
| ⅜x2" face | Clear quartered oak | 285.00 |
| | Select quartered oak | 235.00 |
| | Clear plain oak | 235.00 |
| | Select plain oak | 200.00 |
| | Clear maple | 135.00 |
| | Clear beech | 155.00 |
| | Clear red beech | 195.00 |

**Veneered Panels—**

| 24x60 in., ¼ in., 3-ply, 1 side: | Per ft. |
|---|---|
| Ash | 26c. |
| Hungarian Ash | 39c. |
| Birch | 26c. |
| Curly Birch | 39c. |
| Elm | 24c. |
| Jenisero (Genezero) | 37c. |
| Southern Red Gum (plain fig.) | 32c. |
| Old. Southern Red Gum | 39c. |
| Hawaiian Koa | 39c. |
| Maple | 24c. |
| Birdseye Maple | 47½c. |
| Mahogany | 39c. |
| Oregon Pine | 19½c. |
| Plain Oak | 31c. |
| Quartered Oak | 39c. |
| Walnut | 39c. |

**Millwork—**

O. P., $150 per 1000. R. W., $150 per 1000.

**Labor—**

Rough carpentry, warehouse heavy framing, $15.00 per 1000.

For smaller work, average, $23.00, $30.00 per 1000.

Double hung box frame windows (average) with trim.....$9.50 each

Doors, includ. trim (single panel) 9.00 each

Doors, including trim (five panel) 7.50 each

Screen doors ..... 4.50 each

Window screens ..... 3.50 each

Medicine cases ..... 5.00 each

Cases for kitchen pantries, seven feet high, per lineal foot..... 8.00

Dining room cases same price, if not too elaborate.

Flag poles, per foot..... 1.50

Base, picture mould, moulding, etc. .....$120.00 per M

WAGE—Laborers, $6.00 per day.
Carpenters, $8.00 per day.

**Marble—**

| | |
|---|---|
| Columbia | $1.50 sq. ft. |
| Alaska | 1.50 sq. ft. |
| Tennessee | 1.75 sq. ft. |
| Verde Antique | 3.00 sq. ft. |

**Painting—**

Two-coat work, 35c. per yard.
Three-coat work, 45c. per yard.
Whitewashing, 5c. per yard.
Cold water paint, 10c. per yard.
WAGE—Painters, $8.00 per day.

**Patent Chimneys—**

| | |
|---|---|
| 6-inch | $1.50 lineal foot |
| 8-inch | 1.75 lineal foot |
| 10-inch | 2.25 lineal foot |
| 12-inch | 3.00 lineal foot |

**Pipe Casings**—$8.00 each.

**Plastering—**

Interior, on wood lath, 70c to 75c per yard.
Interior, on metal lath, $1.25 per yard.
Exterior, on brick or concrete, $1.00 per yard.
Interior on brick or terra cotta, 50c. per yard.
Exterior, on metal lath, $1.85 per yard.
Wood lath, $17.50 at yard per 1000.
Metal studding, 80c. per yard.
Metal studding, with lath and plaster; $1.90 per yard.
Galv. (metal lath), 38c. and up per yard, according to gauge.
Lime, f. o. b. warehouse, $2.40 per bbl.
Hardwall plaster, $17.50 per ton, f. o. b. warehouse.
WAGE—Hod carriers, $7.50 per day.
Plasterers, $9.00 per day.

**Plumbing—**

From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $9.00 per day.

**Reinforcing Steel—**

Base price for less than car load lots, $4.75. per 100 lbs.
Car load lots, $4.35 per 100 lbs., f. o. b. San Francisco. (Mill delivery.)

**Roofing—**

Five-ply tar and gravel, $7.00 per square.
Tile, $35.00 per square.
Redwood shingle, $10.00 per square.
Cedar shingle, $11.00 per square.
Reinforced Pabco roofing, $8.25 per square.
WAGE—Roofers, $8.00 to $9.00 per day.

**Rough Hardware—**

Nails, per keg, $8.50 base and very scarce.
Deafening felt, $110.00 per ton.
Building paper, P. & B.,
1 ply, $3.85 per 1000 ft. roll.
2 ply., $5.75 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.50 per hank 100 feet.
Common, $1.75 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

**Skylights—**

Copper, $1.25 a square foot (not glazed).
Galvanized iron, 50c. a square foot (not glazed).
WAGE—Sheet metal workers, $9.00 per day.

**Store Fronts—**

Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.35 per lin. foot.

**Structural Steel**—$150.00 per ton.

This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.

**Tile—**

White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $2.00 per sq. foot, laid.

**Windows—**

Metal, $2.00 a square foot.

## *Mr. Stanley Worker Says:*

"Here's wishing you a great big share of the prosperity we do not doubt 1920 has in store for every dealer in the famous Wrought Steel Hardware made by the Stanley Works.

The Door of Opportunity swings open, easily, smoothly and noiselessly, when hung on three Stanley Ball Bearing Butts."

Keep your eye on the car-owner in your vicinity—more garages than ever before will be built this year. Have a copy of our little booklet, "8 GARAGES," handy to show him when he calls.

# THE STANLEY WORKS

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**New York**
**100 Lafayette Street**

**Chicago**
**73 East Lake Street**

## PROTECTION FOR THE OWNER

### Suggested Contract Under the Cost-Plus-Fixed-Fee System for Building Construction

*The following article covering the cost-plus-fixed-fee form of construction contract, will be found of special interest to contractors in view of the tendency of owners and architects at present to give this form of contract serious consideration.*

*The pitfalls for the unwary are many under the old form of contract and the article by Mr. Wells offers a new and easy solution to old problems.*

By A. E. WELLS

THE form of contract executed between Wells Brothers Construction Co. and its clients is based upon cost plus a fixed fee. That is not a new system, but has been successfully applied to the conduct of work from the smallest repairs to operations of the largest and most complicated nature.

It offers many substantial advantages and on that account the American Institute of Architects has given it serious consideration. At the Nashville meeting last spring a committee reported its findings relative to the cost-plus-fee system and that report has been embodied in Institute Document No. 143, being a tentative draft of a circular of information relative to the system. Throughout the following discussion quotations from this tentative draft appear in quotations.

"The cost-plus-fee method has, as compared with the system of letting a contract by competition and for a stipulated sum, advantages that will be made clear in the course of this circular.

"Under the latter system, a number of competitors of necessarily varying responsibility and competency name the prices at which they will execute the work. The mere price rather than the ability and integrity of the contractor becomes, in almost all cases, the basis of selection, frequently with an attendant train of evils that need not here be discussed. That method presupposes the completion of drawings and specifications in advance of the bidding.

"Under the cost-plus-fee method, the architect and owner may, at any time, either before the making of drawings or specifications, during their progress, or after their completion, choose that Contractor in whose integrity, experience, soundness of judgment and in the strength of whose organization they have the most confidence.

"Since any method of building should be grounded upon the mutual confidence and co-operation of architect, owner and contractor, the ability thus to choose a highly qualified contractor who is persona grata to both architect and owner is among the great advantages of the cost-plus-fee system. Under it, the contractor does not occupy a merely commercial position, but one of peculiar trust and responsibility. His chief interest, the rapid, sound and economic execution of the work, is the same as the owner's.

"His relation to the owner becomes a professional one, quite parallel to that of the architect. He becomes a construction manager for the owner; and if his fee be made not a percentage of the cost, but a fixed sum, his mind is relieved of the usual financial considerations that are antagonistic to the interests of the owner and he assumes completely the position of a disinterested adviser."

In addition to the correctness of the fundamental theory as to the advantages of the cost-plus-fixed-fee system of contract, the form of the contract itself must insure that satisfaction will be had. And yet, no matter how carefully the contract be written, the ability, integrity and personality of the contracting parties have more to do with the success of the undertaking than the mere written words to which their signatures are affixed.

The owner, his architect and builder must have a clear and absolute understanding of what each may expect, a clear definition of what costs are chargeable to the owner and what to the contractor, as well as a definite understanding of the fee. With these matters clearly stated, misunderstandings are avoided.

While the above applies to all forms of building contracts, yet under the cost-plus-fixed-fee plan it is particularly true since the contractor is, in effect, made the building department of the owner, spending the owner's money from week to week and joining with the architect in professional responsibility for the success of the operation.

The form of contract appearing in this article is one commonly executed between Wells Brothers Construction Co. and its clients. It has been thoroughly tested and found satisfactory, and under its terms some of the largest commercial buildings in this country and Canada have been erected. Its fairness to both parties is apparent. It leaves nothing for later dispute.

Such a contract, made between men of integrity and ability, guarantees a successful conclusion, which is well borne out by the history of Wells Brothers' operations during the years in which this form of contract has been in use.

In the choice of a builder the owner is frequently determining the success or partial failure of his undertaking and "one of the great advantages of the cost-plus-fee method lies in the ability of the architect and owner to select the contractor with an eye single to that contractor's ability to do the work. The

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increasing use of that method is reacting upon the building business in the now well-marked tendency to exclude the shrewd, unscrupulous contractor in spite of all his powers of imposing himself upon the owner, in favor of men who have proved their ability in organization and administration with consequent benefit to the owner's interests in the work of construction.

"It is also possible with this system to select the contractor well in advance of the completion of the contract drawings and specifications, and in this way to secure his advice in advance on many matters related to the preparation of plans and the determination of materials and methods—just as an architect can be of service to an owner before he has bought his land, so an experienced contractor can be of service to owner and architect before ground is broken."

Yet this form of contract is not iron-clad. The wishes of the owner with regard to certain features may require changes or the nature of the work may call for additions or omissions.

Following is a copy of Form of Building Contract, based upon cost-plus-fixed-fee:

This agreement made this.....day of .....19..., between ..... a domestic corporation hereinafter called the Owner, party of the first part, and Wells Brothers Construction Co., a domestic corporation, hereinafter called the Contractor, party of the second part,

Witnesseth, That whereas, the Owner desires to erect .....

.....

.....in the City of....., as hereinafter described, and in consideration of the mutual promises herein contained and of One Dollar ($1.00) by each party to the other in hand paid, the receipt whereof is acknowledged, it is agreed as follows:

PLANS AND SPECIFICATIONS WHEN COMPLETED BECOME A PART OF THIS CONTRACT.

Art. 1. The Contractor agrees to provide all the labor and material and to do all things necessary for the proper construction and completion of the

in conformity with the plans and specifications prepared and to be prepared by..... ..... Architect, said plans and specifications to be identified by the signature of the parties hereto and made part of this contract. If anything in the specifications is inconsistent with this agreement, the agreement shall govern.

OWNER AND ARCHITECT MUST BE SATISFIED.

Art. 2. It is agreed that the work included in this contract is to be done under the direction of the said architect and to the entire satisfaction of the said owner and architect, and that the decision of the architect as to the true construction and meaning of the said plans and specifications shall be final and binding upon both parties hereto.

A MINIMUM OF SUBCONTRACTS STATED IN A PERCENTAGE OF TOTAL.

Art. 3. It is agreed that the contractor will himself execute the main part of the work, namely, excavation, plain and reinforced concrete work, masonry, waterproofing, tile partitions, and rough and finished carpentry, and that no profit on the actual cost of material and labor entering into these branches shall go to any subcontractor. The

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ATLAS WHITE

work to be executed by this contractor amounts roughly to sixty per cent (60%) of the cost of the completed buildings.

OWNER AND ARCHITECT APPROVE ALL BIDS BEFORE LETTING OF SUBCONTRACTS OR ORDERING OF MATERIALS.

Art. 4. After the approval of the plans and specifications by the owner, the contractor shall obtain bids for material, for labor and subcontracts from such responsible parties as are willing to make bids, and shall submit said bids to the owner and architect and shall co-operate in securing good competition and the best prices obtainable for labor, material and subcontracts thereon. All contracts for material and labor and all subcontracts shall be subject to the approval of the owner and architect and copies thereof filed with the owner and architect.

BUILDER ASSUMES FULL RESPONSIBILITY AS CONSTRUCTION MANAGER FOR THE OWNER.

Art. 5. The contractor recognizes the relations of trust and confidence established between him and the Owner by this contract. He covenants with the owner to furnish his best skill and judgment and to co-operate with the architect in forwarding the interests of the owner. He agrees to furnish efficient business administration and superintendence and to use every effort to keep upon the work at all times an adequate supply of workmen and materials, and to secure its execution in the best and soundest way and in the most expeditious and economical manner consistent with the interests of the owner.

Art. 6. The contractor shall keep accurate and detailed books of account in the construction office at the building, open to the inspection of the owner and architect at all times. The contractor will allow the owner the benefit of any and all discounts taken or received and shall at all times act in good faith and to the best advantage of the owner in the purchase of materials, in the employment of labor and in all its conduct and activities relative thereto.

FIXED FEE PAYABLE IN INSTALLMENTS DURING PROGRESS OF THE WORK.

Art. 7. In consideration of the performance by said contractor of all the covenants and conditions herein contained, the owner agrees to pay to the contractor the sum of.....
.....
..... Dollars ($.....)
in addition to the actual net cost of the buildings as herein defined. Said sum of.....
.....
Dollars ($.....) to be paid as follows:
.....
..... Dollars ($.....)
on the first of each month, commencing the.....
.....day of .....19....

NET COST DEFINED CLEARLY TO AVOID POSSIBLE MISUNDERSTANDINGS.

Art. 8. (a) By actual net cost set forth herein is meant all sums which the contractor shall expend in the erection and completion of the buildings as called for by the plans, excepting office expenses, rent, salaries, light and other office charges of the contractor at its main office in Chicago. The contractor will not include in the cost of the buildings the salary of the executive officers of the corporation, or the Accounting and Contract Department at its main office in Chicago, but the salary of its resident superintendent, auditor, foreman, clerks, etc., who may be located at the building for this contract, shall be included in the cost of the buildings.

(b) As part of the net cost of the building the contractor will include the actual cost to the contractor in the preparation, inspection, delivery and removal of materials, tools and equipment; all expenditures for superintendence and payrolls, all expenditures for transportation and traveling expense of the officers and employees of the company for expediting the work under contract; the cost of equipment and expense of temporary office

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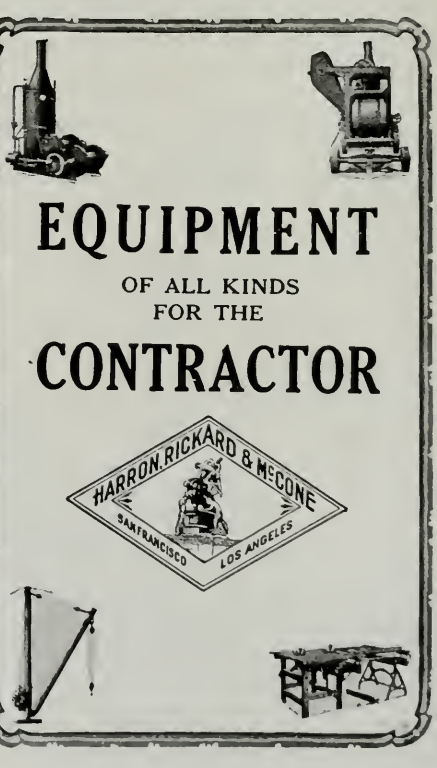


at the building; the cost of liability and compensation insurance. The plant and equipment required for the work shall be included in the cost of the building on a monthly rental basis, as per schedule hereto attached and made a part of this agreement. All perishable tools, materials and supplies delivered to the building by the contractor for temporary purposes shall be charged to the cost of the work not exceeding standard market prices, subject to the approval of the owner or his authorized agent. The lumber furnished shall be charged as part of the cost of the work at its cost to the contractor. All lumber and other materials and supplies left over after completion shall be sold on the premises for the best prices obtainable after five days' notice in writing by the contractor to the owner, and the proceeds will be paid to the contractor and credited as a reduction in the cost of the buildings.

90% of Savings Under Preliminary Estimate Accrues to Owner.

Art. 9. Whereas, it has been decided to erect the buildings above described, and whereas a careful and conservative estimate of the entire cost of the buildings shows that it should not exceed the sum of.....
.....Dollars ($.....) including the before mentioned fee of.....
..... Dollars ($.....) the owner will pay the contractor ten per cent (10%) of any saving effected below the figure.

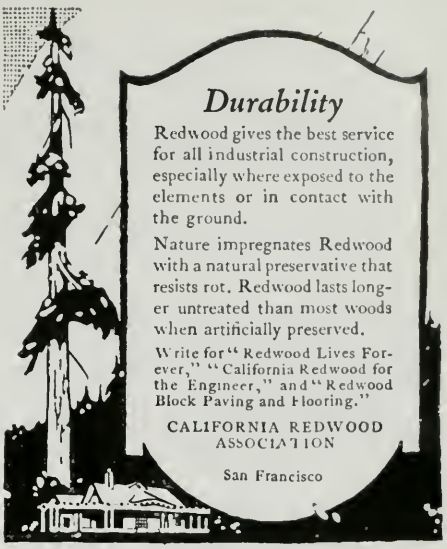
Operation Financed with Owner's Funds Advanced Semi-Monthly.

Art. 10. (a) The contractor and owner especially agree that the owner will provide funds at all times in.....for the payment of all payrolls, bills for material, and local expenditures on the work included under this contract, and to provide funds for discounting all bills for materials and supplies of every kind for the benefit of the owner as far as discounts may be obtained. These payments shall be considered as advances on account of the contract and shall be credited on the semi-monthly estimates for payment. All payments by the owner to the contractor under this contract (except payments on account of the contractor's fee), shall be deposited in a special bank account established by the contractor for this contract. All checks against this special bank account will require the counter-signature of the owner's representative.

(b) The contractor will render to the owner or the owner's authorized representative on or about the 1st and 15th of each month, a statement of the expense, payrolls, bills for material, tools, subcontractor's estimates, vouchers, etc., for payment. This statement will constitute the contractor's application for payment and shall be checked and approved by the architect and the owner or his authorized agent, whereupon the amount shown to be due by the approved statement shall be paid in current funds. Payrolls to be verified under oath if required. If vouchers be not objected to in writing within 30 days after delivery to the owner or his authorized agent, the items of expenditure embraced therein shall be deemed to be approved by the owner.

Builder Guarantees Owner Against Suits and Claims.

Art. 11. (a) The contractor shall procure for the owner and contractor and deliver to the owner, policies for workmen's compensation, public liability in $10,000 and $20,000 limits, or such higher amounts as may be desirable at the owner's option, and owner's contingent liability insurance in the London Guarantee & Accident Co., Limited, casualty and payroll insurance, and the net premiums for the same shall be charged as part of the cost of the buildings. And the said contractor hereby agrees to save and to hold harmless the said owner of, from and against all suits, claims and demands based upon any alleged injury to persons which may occur or be alleged to have occurred by or on account of any act or omission on the part of the said contractor, the subcontractors or any of their servants or agents.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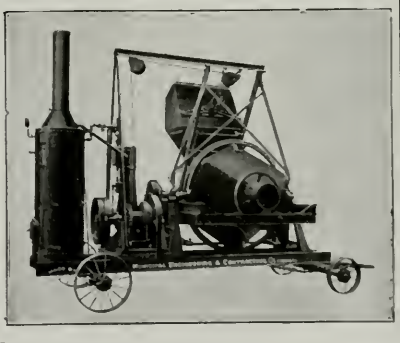

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(b) The owner agrees to carry fire and tornado insurance covering all materials, equipment, construction work, etc., in and around the building, protecting the parties hereto as their interests may appear. It is especially agreed that the contractor shall not be held responsible or liable for any loss, damage, detention or delay caused by fire, cyclone, strikes, lockouts, civil or military authority, insurrection or riot, or other causes beyond the control of the contractor.

DEFINITE PROMISE OF DELIVERY.

Art. 12. All work in connection with said buildings shall be carried on with all possible speed consistent with reasonable cost, good workmanship and safety of construction and whereas, time is the essence of this contract, the contractor agrees to commence work immediately after the site for same is delivered to him by the owner. It is agreed that the erection of said buildings shall progress continuously except for strikes, lockouts, and the acts of God, or other delays beyond the control of the contractor, with the intent that the buildings shall be ready for substantial occupancy on or before the expiration of.....months from the date that site for the building is delivered to the contractor by the owner.

"CHANGES" BRING NO ADDED PROFIT TO BUILDER.

Art. 13. The owner or architect may from time to time, by written instructions to the contractor, make changes in the drawings and specifications, issue additional instructions, require additional work or direct the omission of work previously ordered, and the provisions of this contract shall apply to all such changes, modifications and additions with the same effect as if they were embodied in the original drawings and specifications. The cost of all such changes is to merge in the final cost of the work. No changes involving additional cost shall be made in the work under this contract except upon written order of the architect or owner. The amount to be added to the estimated price under this contract on account of such changes shall be the estimated cost to the contractor for doing the work, including liability insurance, plus ten per cent (10%) for a margin of safety to protect the contractor's portion of any savings below the estimated price.

NO PROFIT ON TEMPORARY HEAT.

Art. 14. No temporary heat is included in the estimated price; should temporary heat be required in order that the work may proceed during cold weather, the architect or owner shall authorize such temporary heat, as an addition to the estimated price on the basis of actual cost to the contractor, including liability insurance, plus ten per cent (10%) for a margin of safety to protect the contractor's portion of any savings below the estimated price.

It is especially agreed that the term "Temporary Heat" includes all preparation for the temporary heating of the building and for the heating of concrete and masons' materials; the furnishing of temporary heat; all salamanders, stoves, labor, attendance, liability and compensation insurance, all temporary enclosure of the buildings with canvas or otherwise, all preparation for, and all thawing of ice and snow from the forms with steam or otherwise.

OWNER MAY COMPEL EMPLOYMENT OF ADEQUATE FORCES.

Art. 15. Should the contractor at any time refuse or neglect to supply a sufficiency of properly


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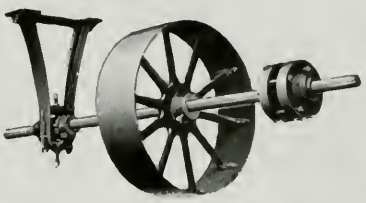

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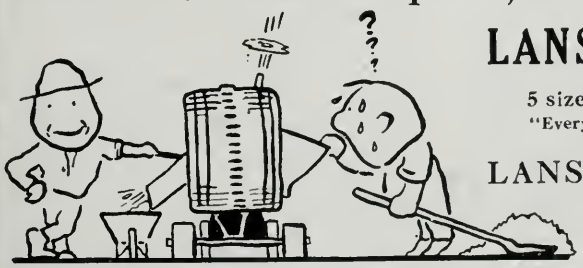

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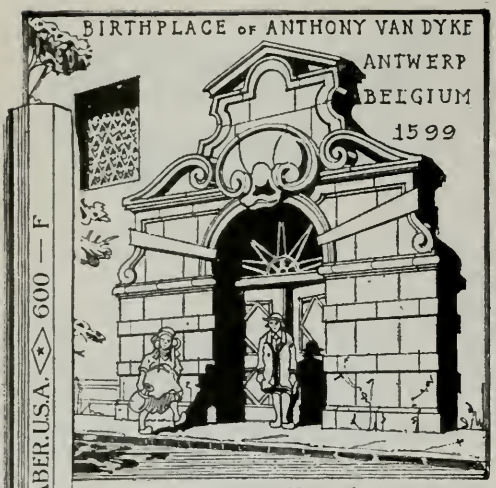


*Franklin James Hunt, Architect*

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skilled workmen, or of materials of the proper quality, or fail in any respect to prosecute the work with promptness and diligence, or fail in the performance of any of the agreements herein contained, such refusal, neglect or failure, being certified by the architect, the owner shall be at liberty after five days' written notice to the contractor, to provide any such labor or materials and charge the cost thereof against the estimated price under this contract; and if the architect shall certify that such refusal, neglect or failure is sufficient ground for such action, the owner shall also be at liberty to terminate the employment of the contractor and to enter upon the premises and take possession, for the purpose of completing the work included under this contract, of all materials, tools and appliances thereof, and to employ any other person or persons to finish the work and provide the materials therefor; and in case of such discontinuance of the employment of the contractor, it shall not be entitled to receive any further payment under this contract until said work shall be wholly finished, at which time, if there shall be an unpaid balance due to be paid to the contractor under this contract, the same shall be audited and certified by the Architect and be paid by the owner to the contractor. The architect shall also adjust the contractor's fee under this paragraph, on the prorate basis of work performed by the contractor.

ARBITRATION PROVIDED IN CASE OF DISPUTE.

Art. 16. Except as herein otherwise provided, it is mutually agreed that should any dispute arise under this contract, between the contractor and the owner, either during the progress of the work or after the termination thereof, or the abandonment or breach of this contract as to the quantity or quality of work done hereunder, or as to any matter of payment or amount of payment to be made hereunder, or as to any matter of loss or allowance under this contract, then such matter in controversy shall be referred to three arbitrators; one to be chosen by each of the parties to this agreement and the third arbitrator to be chosen by the other two arbitrators so selected, before proceeding to the business of arbitration; and the decision of any two of said three arbitrators shall be final and conclusive upon all parties hereto and such determination shall be a condition precedent to the right of action by either party as against the other. Each party hereto shall pay one-half of the expense of such arbitration.

In Witness Whereof, the parties to these presents have hereunto set their hands and seals, this .....day of.....19....

.....

.....

RENTAL SCHEDULE OF EQUIPMENT IN ACCORDANCE WITH CONTRACT *

* Rental prices will be revised in accordance with standard market rentals at the time contract is closed.

| | Per Month |
|---|---|
| 35 H. P. double drum steel hoist | $100.00 |
| 50 H. P. double drum electric hoist | 100.00 |
| 1-Yd. concrete mixer with engine or motor | 150.00 |
| Tower equipment, including cathead, set of top and bottom sheaves and tower hopper | 50.00 |
| Power driven saws, gas or electric | 40.00 |
| Mortar mixers | 60.00 |
| Clamshell derrick | 125.00 |
| 3-Drum engine for clamshell | 125.00 |
| 10 H. P. swing engine | 25.00 |
| 1½-Yd. clamshell buckets | 60.00 |

| | Per Month |
|---|---|
| Motors (per H. P.) | $ 1.00 |
| Engineer's transit | 10.00 |
| Engineer's level | 7.50 |
| Brick hoist, electric | 75.00 |
| Centrifugal pumps, electric (sump) | 25.00 |
| 5-Ton stone jacks | 5.00 |
| Small Sasgen derricks | 10.00 |
| Small office safe | 4.00 |
| Brick cages | 10.00 |
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### Advantages of the Diffuselite Fixture for Correct Lighting

(Concluded from page 118)

ters directly into the question of relative window area to floor area and makes possible the reduction of glass area.

To sum up, the Diffuselite system is made up of:

Light diffusing blinds for window openings, made reversible for cleaning.

Indirect and semi-indirect lighting fixtures which can be easily and quickly cleaned.

Reflecting coatings for ceilings and side walls which maintain their initial co-efficients and can be constantly washed without injury.

A ribbed glass which will pass more light in and prevent light escape, and not show specular reflection.

A double-hung, weather tight window which will reverse so as to permit easy and safe cleaning, all manufactured and installed under the direction of the Diffuselite Department of The J. G. Wilson Corporation.

Under Diffuselite conditions, the initial cost is practically the only cost.

All installations being easily cleaned, the initial amount of light acquired can always be maintained.

The quantity and quality of both natural and artificial light acquired cuts down the quantity of electric current used to such a degree that the saving from this source alone will pay for the entire installation in a few short years.

The blinds in addition to their light diffusing qualities perform all the functions of fabric shades, fabric awnings and ventilators.

The window, through being perfectly tight, saves heat units.

### Patent Vulcanite Roofing Company Consolidates

The Patent Vulcanite Roofing Company, with main offices in Chicago and a successful branch in San Francisco, has merged its interests with the Beaver Board Companies of Buffalo, New York.

The new arrangement means that the Vulcanite Company will have the backing of the strong Beaver interests and consequently will be enabled to undertake a large expansion immediately. For some time they have been in an oversold condition and it is planned to make an immediate increase in manufacturing facilities in order to bring production up to sales.

The Patent Vulcanite Roofing Company manufactures plain and ornamental roll roofings, asphalt shingles and other roofing products, and is regarded as one of the foremost roofing manufacturers in the United States. They maintain nine district sales offices, six factories and forty-three warehouses, and their connection with the Beaver Board Companies, who are manufacturers of the well-known "Beaver Board," means an organization of exceptional possibilities.

The Beaver Board Companies recently absorbed the Tonawanda Board and Paper Company of Tonawanda, New York, and they operate a huge tract of timber land in Northern Canada, with mills at Thorold, Canada, and finishing plants at Ottawa, Canada, and Buffalo, New York.

Mr. Glendinning, the founder and president of the Vulcanite Company, will retire from active management of the business, but will still retain a large financial interest in the company; otherwise the Vulcanite organization is to remain unchanged.

### Shorter Names

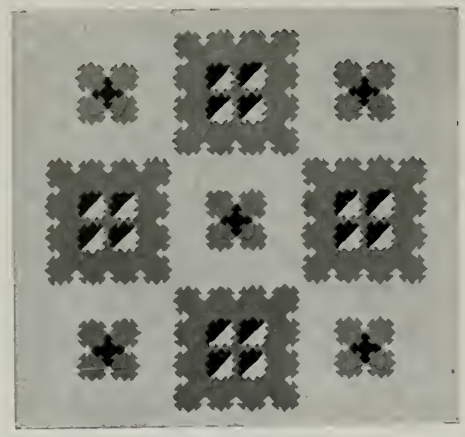
The Pacific Building Materials Co. have shortened their name to Pacific Materials Co., the change having become effective on December 29, 1919. There has been no change whatever in ownership, personnel, policies or lines handled, the innovation being in the name only.

* * *

Pacific Steel and Boiler Company, with sales offices at 322 Monadnock building, San Francisco, Mr. A. W. Merrill, manager, announces change of name to the General Boilers Company. The main offices and plant are at Waukegan, Illinois. The company reports a good year in 1919 with prospects for this year of an even larger volume of business. Considering the fact that this company has been engaged in business in San Francisco only a year, the record made here in twelve months' time is one to be proud of. Manager Merrill reports a goodly number of sales of the Pacific patented steel fire box portable low pressure steam heating boilers. Architects and engineers are specifying them quite generally and among the installations are in the Merced High school, Contra Costa County court house and jail, Humboldt Normal school, Arcata; St. Joseph's Catholic school, San Jose; Mission Label Co. plant, San Jose; Argonne school, San Francisco; State cottage, Stockton, and many others.

### Contract for Big Power Plant

The Butte Electric and Mfg. Co., Paul C. Butte, manager, 534 Folsom street, San Francisco, has secured the contract for installing a power plant for the Conaway Irrigation Project at Elkhorn, Yolo county, California. The plant will have a capacity of 1200 horsepower, the secondary leads will consist of twelve 600,000 C. M. cables, and when completed will be the largest and most pretentious pumping plant used for irrigation work in the country.



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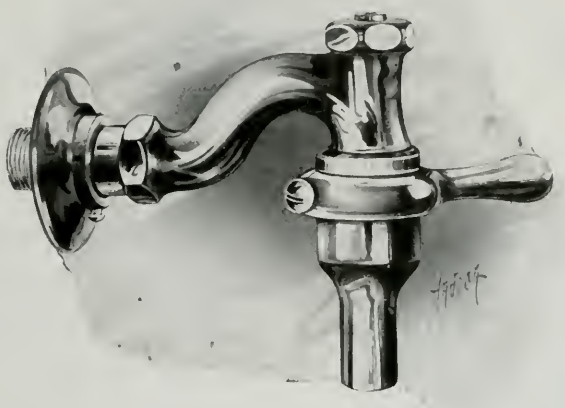

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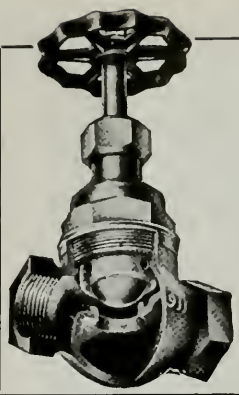

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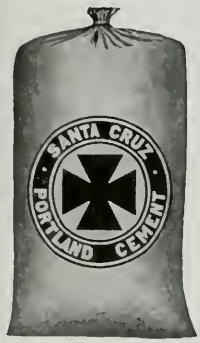


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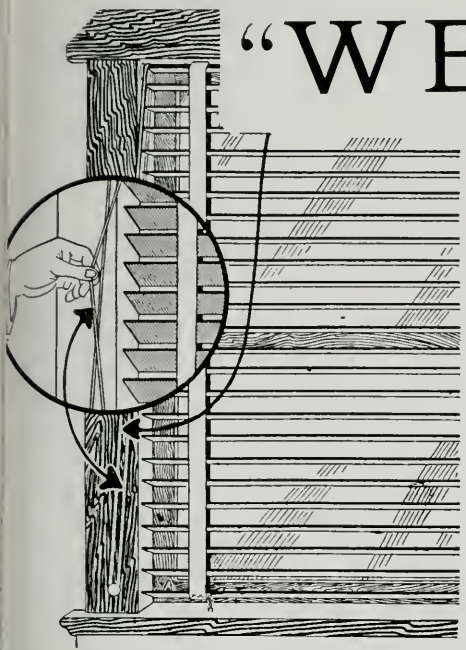

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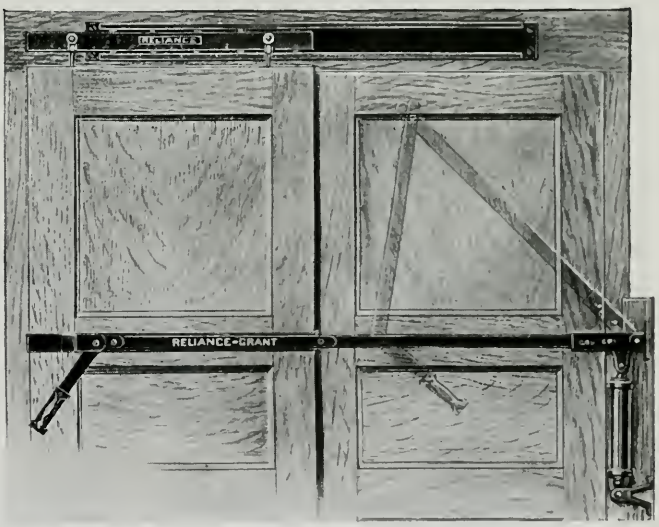


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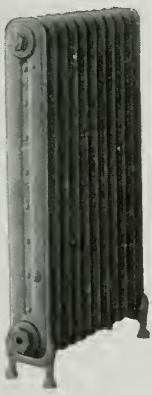

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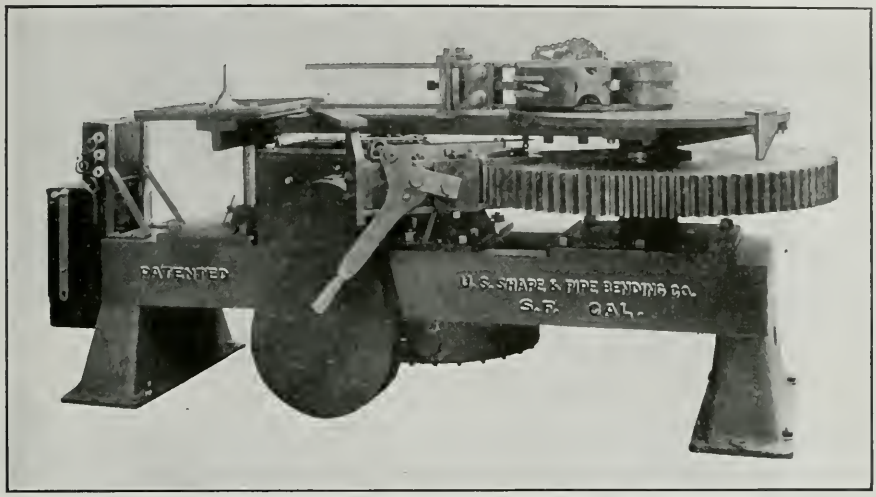


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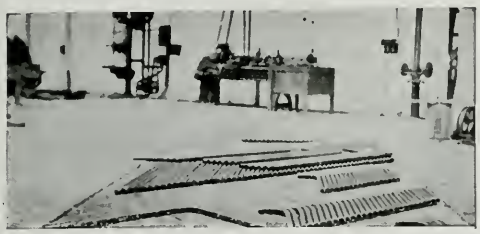

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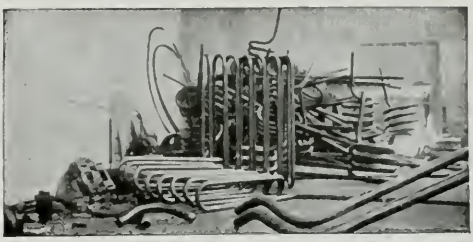

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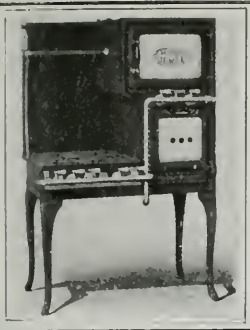

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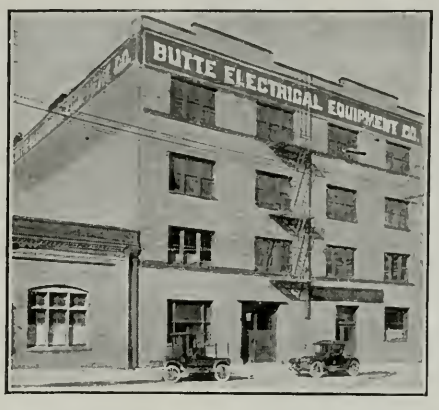


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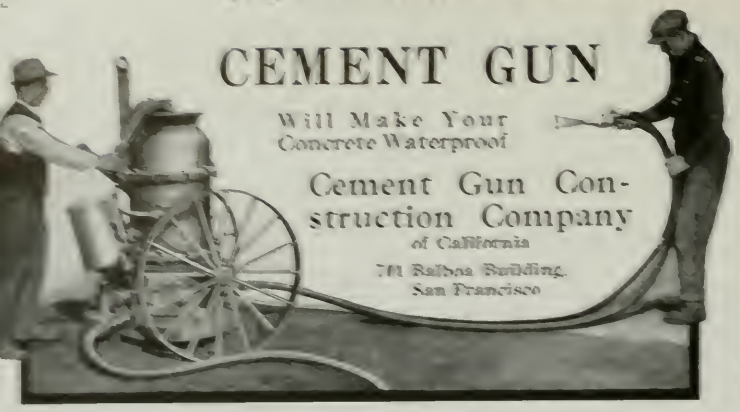

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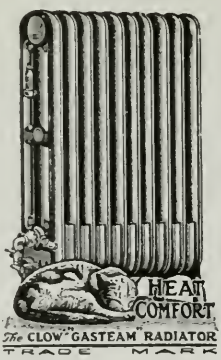


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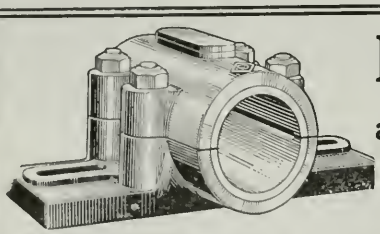

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**NASON'S OPAQUE FLAT FINISH** A FLAT, WASHABLE OIL PAINT, made in soft Kalsomine tints—a practical article for WALLS, CEILINGS, Etc. Economical and Durable. Agency TAMM & NOLAN COMPANY'S high grade Varnishes and Finishes, made on the Pacific Coast to stand our climatic conditions.

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151 Potrero Ave.—SAN FRANCISCO—436 Market St.
PORTLAND
SEATTLE
LOS ANGELES

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

BUILDING MATERIAL, SUPPLIES, ETC.
- Pacific Materials Co., Underwood Bldg., San Francisco.
- Waterhouse-Wilcox Co., 523 Market St., San Francisco.
- H. W. Johns-Manville Company, First and Howard Sts., San Francisco.

CABINET MAKERS
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Company, 64 Rausch St., San Francisco.

CASEMENT WINDOW HARDWARE
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

CASTINGS
- Dow-Herriman Co., 140 Howard St., San Francisco.

CEMENT
- Atlas Portland Cement Co., New York and Chicago. (See advertisement for Coast Distributors.)
- Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.
- Standard and Santa Cruz Portland Cement Companies, Crocker Bldg., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
- Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR FINISH
- Concreta, sold by W. P. Fuller & Co., all principal Coast cities.
- Glidden Stucolor Liquid Cement Coating. The Glidden Company, 123 Hooper St., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies Oakland, Los Angeles, Portland, Tacoma, Spokane; and Pacific Building Materials Co., 525 Market St., San Francisco.
- Tuco Products Corpor., "Klingstone stucco," Humboldt Bank Bldg., San Francisco.
- The Paraffine Companies, Inc., 34 First St., San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
- Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
- Paraffine Paint Co., 34 First St., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING
- Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.
- Glidden Concrete Floor Dressing. The Glidden Company, 123 Hooper St., San Francisco.

CEMENT GUN
- Cement Gun Construction Company of California, 701 Balboa Bldg., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS
- Fink & Schindler, 218 13th St., San Francisco.
- Mullen Manufacturing Company, 64 Rausch St., San Francisco.
- Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL
- Haslett Warehouse Co., 310 California St., San Francisco.

CLAY PRODUCTS
- W. E. Mushet Co., 502 Mission St., San Francisco.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- United Materials Co., Crossley Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS
- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
- Vulcan Iron Works, San Francisco.

COMPRESSED AIR CLEANERS
- United Electric Co., Canton, O., mfr, of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

CONCRETE CONSTRUCTION
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Clinton Construction Co., 140 Townsend street, San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Palmer & Petersen, Monadnock Bldg., San Francisco.
- Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE MIXERS
- Austin Improved Cube Mixer. Stuart S. Smith, 625 Market Street, San Francisco.
- Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.
- Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.
- Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.

CONCRETE REINFORCEMENT
- United States Steel Products Co., San Francisco. Los Angeles, Portland and Seattle.
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.

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Mills Bldg., Bush & Montgomery Sts. San Francisco, Cal.

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE REINFORCEMENT (Continued)

Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Steel bars sold by W. S. Wetenhall Co., 450 Irwin St., San Francisco.
Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., 527 Tenth St., San Francisco.

CONDUITS

Garnett, Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL

Barrett & Hilp, Sharon Bldg., San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
R. W. Littlefield, 565 Sixteenth St., Oakland.
Unit Construction Co., Phelan Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
A. D. Collman, 110 Jessie St., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.
Monson Bros., 1907 Bryant St., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
McLeran & Peterson, Hearst Bldg., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.

CONTRACTORS' EQUIPMENT

Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
Harron, Rickard & McCone, Townsend St., San Francisco.
Lansing Company, 338 Brannan St., San Francisco.
Garfield & Co., Hearst Bldg., San Francisco.
Smith, Booth-Usher Co., 40 Fremont St., San Francisco, and 228 Central Ave., Los Angeles.

CONVEYING MACHINERY

Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
P. H. Reardon, 57 First St., San Francisco.

CRUSHED ROCK

California Building Material Company, Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND

Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Glidden's Liquid Rubber. The Glidden Company, 123 Hooper St., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS

Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
Stanley Works, New Britain, Conn.
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS

Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS

Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS

Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
M. E. Ryan, Redwood City, Calif.
Rex Electric & Engineering Co., 253 Minna St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.

ELECTRIC PLATE WARMER

The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT

Sierra Electric Company, 515 Market St., San Francisco.
Garnett, Young & Co., 612 Howard St., San Francisco.
Butte Electrical Equipment Co., 530 Folsom St., San Francisco.
Safety Electric Company, 56-65 Columbia Square, San Francisco.

D. N. & E. WALTER & CO.

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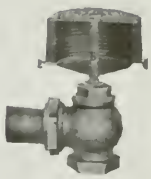

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.

ELEVATOR EQUIPMENT
- Elevator Supplies Company, Inc., 186 Fifth St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.
- Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

ELEVATOR DOOR HARDWARE
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

FANS AND BLOWERS
- John Ringius, 252 Townsend St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
- Standard Fence Construction Co., 77 O'Farrell St., San Francisco, and 310 12th St., Oakland.

FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco, 830 S. Los Angeles St., Los Angeles.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.
- Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- General Fire Extinguisher Company, 453 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.
- Asbestos Paints. The Glidden Company, 123 Hooper St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco,

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
- Inlaid Floor Company, 600 Alabama St., San Francisco.
- H. N. McNab, 2307 17th Ave., Oakland.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

GALVANIZED IRON WORK
- Power & Pike Co., 22-24 Main St., San Francisco.
- James A. Nelson, 509 Sixth St., San Francisco.

GARAGE HARDWARE
- The Stanley Works, New Britain, Conn., represented in San Francisco, Los Angeles, Seattle by John T. Rowntree, Inc.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES
- Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GAS STEAM RADIATORS—FUMELESS, ETC.
- Clow Gas Steam Radiators, F. A. Hamilton, Agent, Crossley Building, San Francisco.
- Ra-Do Fumeless Gas Radiators, manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.
J. O'Shea, 2100 17th St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.
Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Inlaid Floor Co., 600 Alabama St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC—GAS
Alex. Colman, 706 Ellis St., San Francisco.
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC.
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
James A. Nelson, 517 Sixth St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC. (Continued)
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
C. U. Dunham Company, Sheldon Bldg., San Francisco.
O. M. Simmons Co., 58 Sutter St., San Francisco.

HOLLOW TILE BLOCKS
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
Ralphs-Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 745 Folsom St., San Francisco.
Chicago Signal Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.
Sonnenschein Bros., 470 Sutter St., San Francisco.
F. A. Taylor & Co., 251 Post St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.

KITCHEN CABINETS
Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

KITCHEN EQUIPMENT
James A. Nelson, 517-19 Sixth street, San Francisco.

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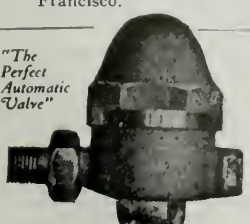
J. L. Mott Iron Works, 553 Mission St., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

LANDSCAPE GARDENERS
- MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING AND PLASTERING
- MacGruer & Simpson, Call-Post Bldg., San Francisco.
- A. Knowles, Call-Post Bldg., San Francisco.
- Jas. F. Smith, 273 Minna St., San Francisco.

LATHING MATERIAL
- Pacific Materials Co., 525 Market St., San Francisco.
- Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
- Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
- Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
- Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
- Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
- D. N. & E. Walter & Co., 562 Mission St., San Francisco.
- The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LOCKERS—STEEL
- George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
- California Redwood Association, 216 Pine St., San Francisco.
- Dudfield Lumber Co., Palo Alto, Cal.
- Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- Pope & Talbot, foot of Third St., San Francisco.
- Portland Lumber Co., 16 California St., San Francisco.
- Sunset Lumber Company, First and Oak Sts., San Francisco.

MAIL CHUTES
- American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
- Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
- Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

MARBLE
- American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
- Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
- Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

METAL DOORS AND WINDOWS
- Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
- U. S. Metal Products Co., 330 Tenth St., San Francisco.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- National Mill and Lumber Co., San Francisco and Oakland.
- The Fink & Schindler Co., 218 13th St., San Francisco.

OIL BURNERS
- American Standard Oil Burner Company, Berkeley.
- Fess System Co., 220 Natoma St., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
- W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

OFFICE EQUIPMENT
- Western Office Equipment Co., 467 Market St., San Francisco.

ORNAMENTAL IRON AND BRONZE
- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

OVERHEAD CARRYING SYSTEMS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

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PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
The Paraffine Companies, Inc., 34 First St., San Francisco.
Anti-Rust Coatings. The Glidden Co., 123 Hooper St., San Francisco.
Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Wadsworth, Howland Co., makers of Bay State Brick and Cement Coating, Boston, Mass. Hambley & Son, Distributors in San Francisco and Los Angeles.

PAINTING, TINTING, ETC.
I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
The Glidden Company of California, 123 Hooper St., San Francisco.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER
White Bros., Fifth and Brannan Sts., San Francisco.

PARTITIONS—FOLDING AND ROLLING
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PAVING BRICK
California Brick Company, Niles, Cal.

PENCILS
Eberhard Faber, Monadnock Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE—VITRIFIED SALT GLAZED TERRA-COTTA
Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS
The Paraffine Companies, Inc., 34 First St., San Francisco.

PLASTER CONTRACTORS
A. Knowles, Call-Post Bldg., San Francisco.
MacGruer & Simpson, 180 Jessie St., San Francisco.
James F. Smith, 273 Minna St., San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Wm. F. Wilson Co., 328 Mason St., San Francisco.
Whale-bone-ite Fixtures, sold by E. C. Whalen, 325 Monadnock Bldg., San Francisco.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.
P. H. Reardon, 57 First St., San Francisco.

PUMPS
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
Dow-Herriman Company, 140 Howard St., San Francisco; factory, Petaluma.
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

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S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Dow-Herriman Co., 140 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, Monadnock Bldg.

REVERSIBLE WINDOWS
Hauser Window Company, 157 Minna St., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co., 985 Market St., S. F.
Union Blind & Ladder Company, Oakland, Cal.
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., 525 Market St., San Francisco
Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

ROOFING AND ROOFING MATERIALS
Bender Roofing Company, Monadnock Bldg., San Francisco.
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
The Vulcanite Roofing Co., Texas and 16th Sts., San Francisco.
H. H. Robertson Co., Hobart Bldg., San Francisco.

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
Pacific Materials Co., 525 Market St., San Francisco.

SAND
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK
Jas. A. Nelson, 517 Sixth St., San Francisco.
Power & Pike Co., 22-24 Main St., San Francisco.

SHINGLE STAINS
Bass-Hueter Paint Company, all principal Coast cities.
Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francicco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.
Argonaut Shingle Stains. The Glidden Co., 123 Hooper St., San Francisco.

SKYLIGHTS
H. H. Robertson Co., Hobart Bldg., San Francisco.
Jas. A. Nelson, 517 Sixth St., San Francisco.

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Western Pipe & Steel Co., 444 Market St., San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

STEEL REINFORCING
Badt-Falk & Co., Call-Post Bldg., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Truscon Steel Co., 527 Tenth St., San Francisco.
W. S. Wetenhall Co., 725 Second St., San Francisco.

STEEL ROLLING DOORS
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., agents, Underwood Bldg., San Francisco.
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles.

STEEL SASH
Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
U. S. Metal Products Company, 330 Tenth St., San Francisco.

STEEL WHEELBARROWS
Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

SUMP AND BILGE PUMPS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES
Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.

TANKS FOR OIL, GASOLINE, KEROSENE, ETC.
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

TELEPHONE AND ELECTRIC EQUIPMENT
Bittmann & Battee, 745 Folsom St., San Francisco.
Direct Line Telephone Co., 320 Market St., San Francisco.

THEATER AND OPERA CHAIRS
C. F. Weber & Co., 365 Market St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Johnson Service, Rialto Bldg., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

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United Materials Co., Crossley Bldg., San Francisco.

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P. H. Reardon, 57 First St., San Francisco.

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VALVES—PIPES AND FITTINGS
Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
Sloane Valves, sold by E. C. Whalen, 325 Monadnock Bldg., San Francisco.
General Fire Extinguisher Co., 453 Mission St., San Francisco.
O. M. Simmons Company, 58 Sutter St., San Francisco.
H. Mueller Mfg. Co., 635 Mission St., San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.
The Glidden Company, 123 Hooper St., San Francisco.
Standard Varnish Works, 55 Stevenson St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VENTILATORS
H. H. Robertson Co., Hobart Bldg., San Francisco.
Power & Pike Co., 22-24 Main St., San Francisco.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.

WALL BEDS, SEATS, ETC.
American Automatic Lock & Lift Co., 72 Fremont St., San Francisco. (Display at 77 O'Farrell street.)
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.

WALL BOARD (Continued)
"Liberty" Wall Board, manufactured by Key-Hold Plaster Lath Co., 148 Hooper St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Bay State Brick & Cement Coating, manufactured by Wadsworth, Howland Co., Boston; Hambley & Son., Distributors for Northern and Southern California.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE CEMENT
"Atlas White," see coast agencies, page 127.
"Medusa White," sold by Pacific Materials Co., Underwood Bldg., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass-Hueter Paint Co. All principal Coast cities.
Velvet White Enamel. The Glidden Company, 123 Hooper St., San Francisco.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

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Hauser Window Co., 157 Minna St., San Francisco.
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Clinton Wire Lath, sold by L. O. Norris, 140 Townsend St., San Francisco.

WIRE FENCE
Standard Fence, 310 12th St., Oakland.

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Mangrum & Otter, 827 Mission St., San Francisco.

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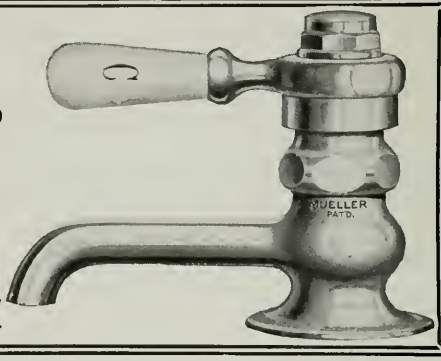


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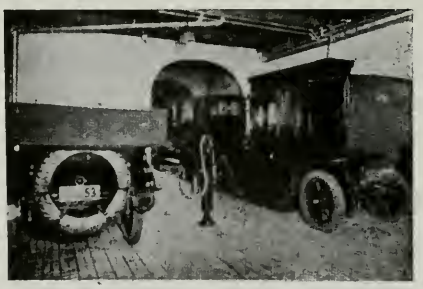

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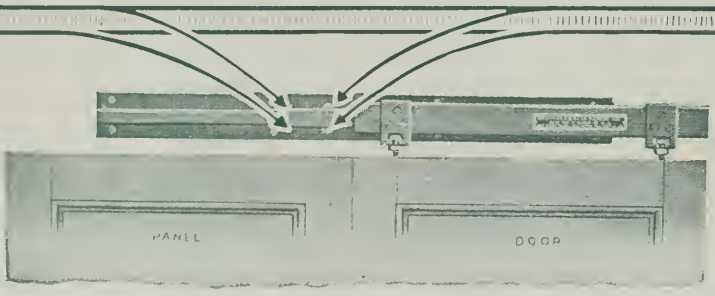


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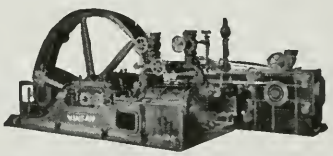

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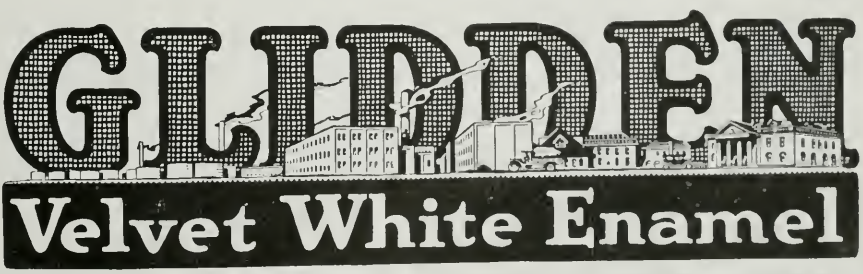

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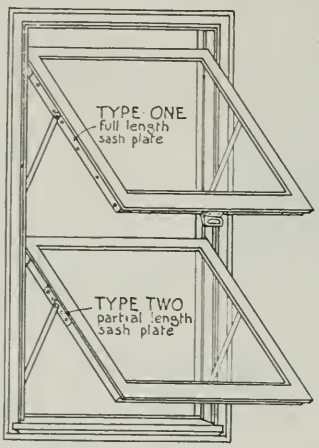


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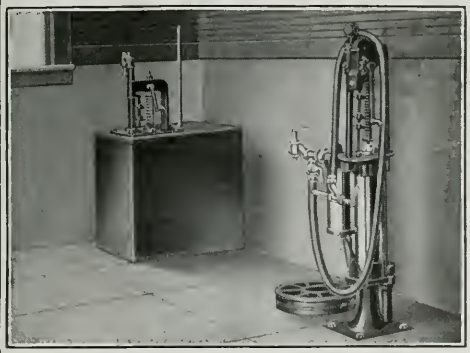

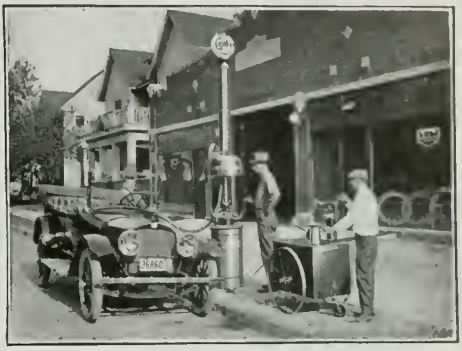

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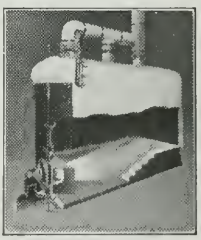

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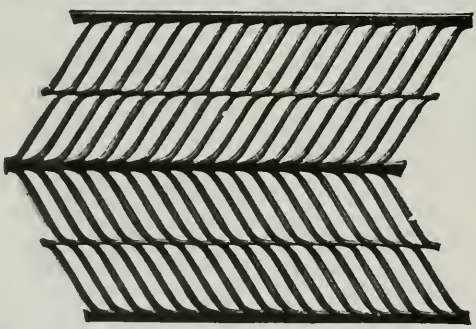

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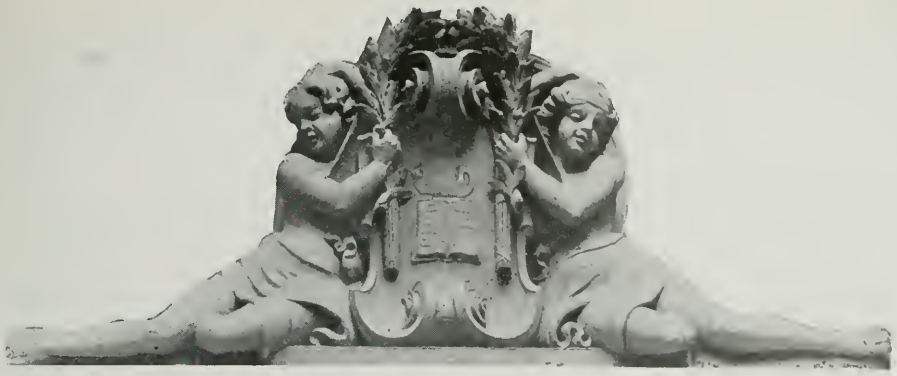

# The Architect and Engineer

Volume LX. Incorporated Number 2.

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John Reid, Jr., Architect

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SWIMMING POOL, ESTATE OF JAMES ROLPH, JR.
MENLO, CAL. JOHN REID, JR., ARCHITECT

THE
ARCHITECT
AND
ENGINEER

FEBRUARY, 1920 Vol. LX. No. 2.

## Work by John Reid, Jr., A. I. A.

By IRVING F. MORROW, Architect

THERE is a common impression, not even confined to the lay mind, that the particular contribution of the Ecole des Beaux-Arts to American architecture has consisted of niches in plan and cartouches in elevation. For such an idea there may have been a certain appearance of justification. Behind almost every misconception there exists a modicum of truth; the error generally lies in a failure to apprehend the true proportions of elements and to estimate values justly. It would be idle to deny that many a superficial designer has returned from Paris with a generous equipment of trivial ideas. It is equally true that mediocre minds will inevitably produce mediocre results, of one kind or another. If the superficial Beaux-Arts designer were not furnishing French superficialities he would be furnishing American ones; and, in matters of art at least, if it comes to a choice between the two kinds, there is not a little to be said in favor of the former. But it is, after all, only a superficial view in itself which sees in the influence of the French school training nothing more important than the application of superfluous decoration. Going back to the early days of Hunt and Richardson and reviewing the long line of our subsequent Paris-trained architects, it must become apparent that the serious ones have never renounced genuine personality in the face of superficiality; that, in fact, they have worked in a surprisingly

large variety of styles and moods. Yet there is, for all that, a school mark upon them. Their work as a body, regardless of style or kind, evinces one common trait, which may be most succinctly described as a sense of order. This is the true contribution of the École des Beaux-Arts to American architecture.

Mr. Reid is one of the architects of French training who have zealously eschewed the easy French superficiality, and who exemplify this trait of order. Not, either, the quasi-order of unthinking formalism, but the order which results from careful consideration. Throughout his work a feeling of seriousness is apparent; in cases one might be pardoned for saying almost too apparent—one would welcome now and then the relaxation of pure buoyancy breaking through the prevalent painstaking reserve. Yet it is ungrateful to quibble over a virtue such as seriousness. In its every phase and at every stage, from the attacking of the problem to the execution of the last detail, Mr. Reid's work bespeaks the most

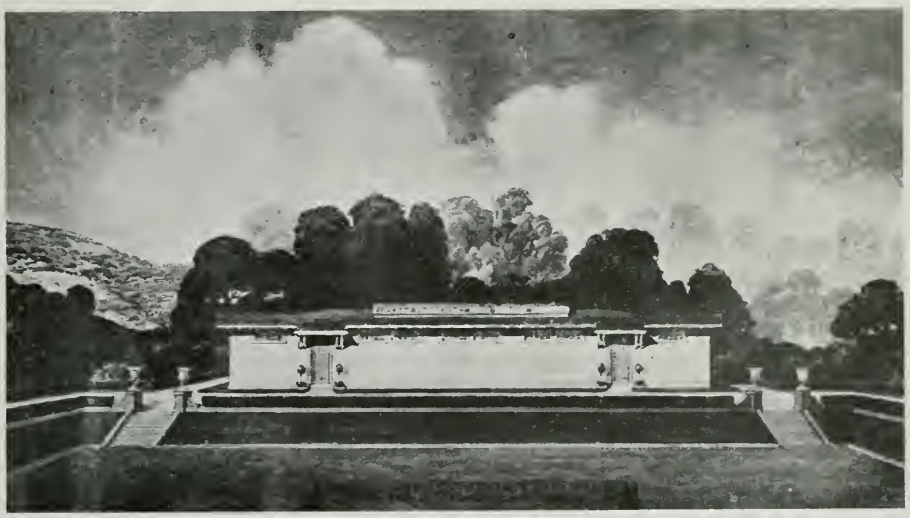
PERSPECTIVE, RICHFIELD OIL STATION No. 2
John Reid, Jr., Architect

commendable and unflagging care. It is, architecturally speaking, unfailingly well studied and well executed. This alone is sufficient to make it stand out amid the dreary waste of ill-considered building which surrounds us.

Creative minds may be divided broadly into two classes. There are those whose interest is primarily in form as such, and those whose main preoccupation is with the elements of which things are constituted. The one type is apt to spend itself in the creation of compositions, with only a flagging interest remaining for the consideration of details. The other type is content to move among a certain number of favored compositions which common experience has developed and justified, relying for interest largely in perfection of handling. The union of both capacities to the fullest degree is reserved for real genius.

Mr. Reid belongs in the second class; and consideration from this point of view helps to explain both the merits and the limitations of his

work. He is least successful in those buildings where the conditions of the problem preclude elements of a traditional architectural nature developed with particular reference to their own interest and perfection. In such structures there is no division of allegiance between "practical" and "aesthetic" claims; his fidelity to the program is unwavering. But neither is there discovered any common ground where the two sorts of interests can meet and adjust their differences. In the absence of the opportunity to compose with recognized elements of abstract beauty, he fails to invest the larger composition with a compensating interest of its own. For this reason the commercial work is the least satisfactory of his output. Viewed from the standpoint of fulfilling the practical requirements it is undoubtedly admirable; from the point of view of design it is much less adequate. Consider, as the extreme example, the Turbine Machine Shop for the Bethlehem Shipbuilding Corporation at Alameda (pages 46 and 47). Here is a problem out of whose novel requirements and vast bulk a designer



TENNIS CLUB HOUSE, GOLDEN GATE PARK, SAN FRANCISCO
John Reid, Jr., Architect

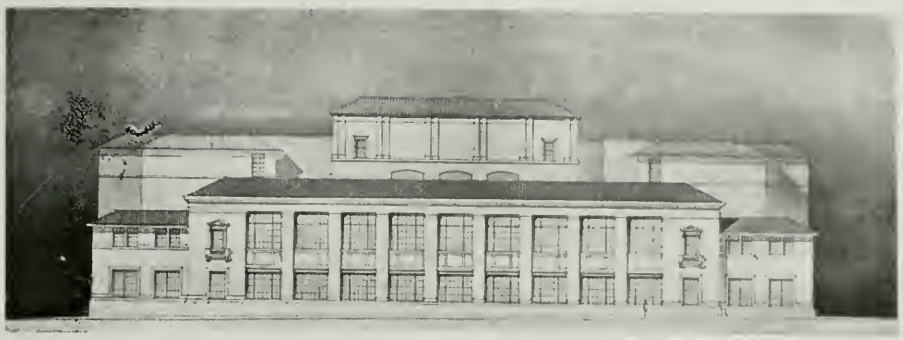
of the other type might have evolved an impressive expression of the tremendousness of modern industry; instead of which we have only a toying with the unimportant details of an engineer's problem. On the other hand, where a certain flexibility in the requirements permits the introduction of specifically architectural elements and their careful manipulation, Mr. Reid's success is genuine and not infrequently conspicuous. There is a group of miscellaneous small problems, comprising the Rolph Swimming Pool (frontispiece), the Richfield Oil Station (page 44), the Golden Gate Park Tennis Club House (page 45), the Mountain Spring Ranch Kennels (page 46), the Headquarters for the Chief of the San Francisco Fire Department (page 48), and the Vestibule to the altered house at 3839 Jackson Street, San Francisco (page 83), all of which are freely handled and invested with a quiet dignity and charm. This work is distinctly "well-bred"; it is deferential to tradition without being merely submissive to precedent. The problems are, indeed, slight ones, and are

ELEVATION OF KENNELS, MOUNTAIN SPRING RANCH
John Reid, Jr., Architect

handled, quite properly, without recourse to the elaborate monumental classical formulæ. Yet the sense of order is unobtrusively apparent, the compositions and the elements are simple and direct, and the result is an atmosphere which can with entire propriety be called classical.

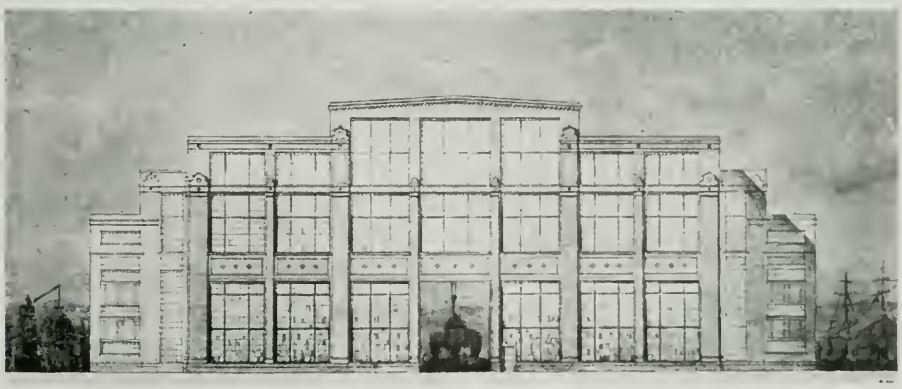
Recent San Francisco schools bulk large in the volume of Mr. Reid's work, and the achievement in this line is on the whole distinctly creditable. All of the buildings are carefully and conscientiously planned. The purely human problem involved in school designing might sometimes receive greater stress, but in no instance is a sense of its reality and importance ever absent. With that facile and meretricious standardization (stultification) of plan and treatment which a pseudo-scientific specialism too often succeeds in foisting upon us under the guise of efficiency, Mr. Reid has nothing to do. In the handling of these problems his mind may not always be distinguished by exceptional vivacity, but it is at least open and undeluded, which can never be true of a mind stagnating under the pseudo-scientific aberration. The school building is—or should be—primarily a human problem, and humanity is infinitely mobile. Schools are for children, who are the next generation. It probably reduces to a question of whether our main preoccupation is teaching the next generation to live, or to make a living. There still remain people who are old-fash-

TURBINE MACHINE SHOP, ALAMEDA PLANT, BETHLEHEM SHIPBUILDING CORPORATION, LTD.
John Reid, Jr., Architect



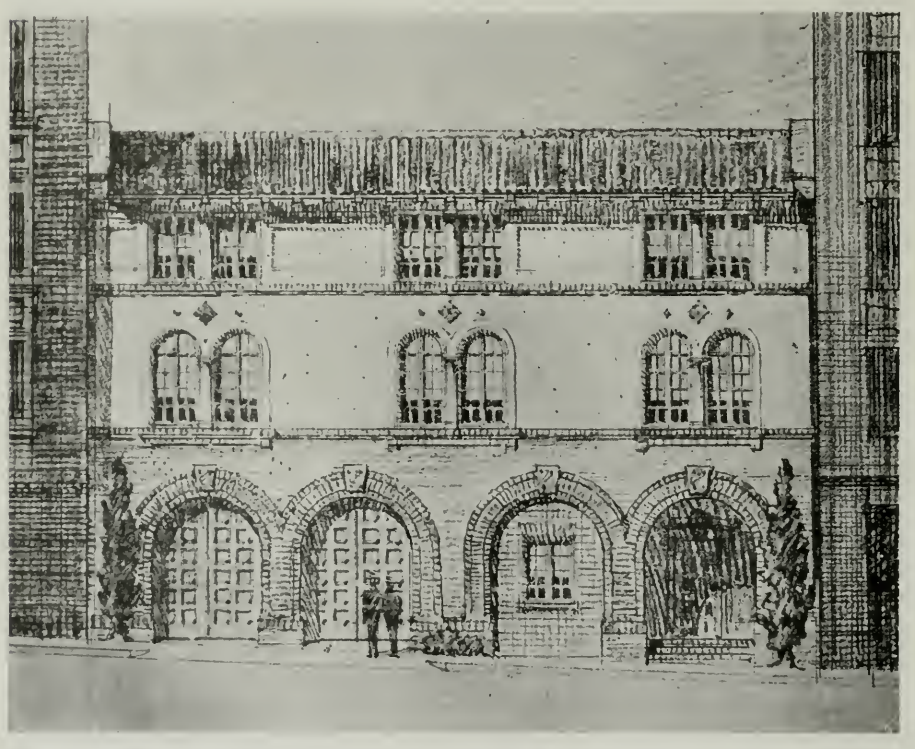
NORTH BEACH HIGH SCHOOL, SAN FRANCISCO
John Reid, Jr., Architect

ioned enough to hold to the first ideal without being ashamed to admit it. What hope remains for the fine art of living if the spirit of youth be made subsidiary to scientific ventilation and administrative facility? The problem really begins where the specialist is apt to think it ends. His scientific program—or at least such part of it as is really scientific—is not the end toward which we are to strive; it is merely an item in the means of its proper attainment, which should be taken for granted by the way, just as is such a necessary feature as sound construction. Mr. Reid has done schools as modern as the best, but he has not failed to take account of this human aspect of his problem as well. He has realized that the atmosphere which pervades the child's mind is at least of equal importance with the air that goes into his lungs, and that a decent spiritual outlook is in no wise secondary to adequate light for his eyes. The smaller schools are in a sense the more human of the lot—it is, indeed, in the nature of the case somewhat easier to make them so. The influence of the little building for subnormal children (pages 60, 68 and 69) can not be other than happy. The Twin Peaks School (pages 70 and 71) is one of Mr. Reid's most fortunate compositions. It presents but one serious shortcoming (dictated, however, by the necessities of its lot); namely, its length runs into the prevailing contours of the background hills rather



TURBINE MACHINE SHOP, ALAMEDA PLANT, BETHLEHEM SHIPBUILDING CORPORATION, LTD.
John Reid, Jr., Architect

than parallel to them. The Hillcrest School (page 65) is charming. One learns with regret of the removal, upon completion of the building, of the trees which back it and so enhance its quality in the drawing. Why must school yards ever present a forbidding barrenness surpassing even the desert? Of all forms of adornment none is more easy of attainment or more gracious in its amenity than that offered by growing things. There probably does not exist a school yard which is incapable of offering legitimate opportunities for the relief of well-placed shrubs and trees. Turn, for instance, to the photographs of the yards of the Monroe and



PRELIMINARY SKETCH, CHIEF ENGINEER'S HEADQUARTERS,
SAN FRANCISCO FIRE DEPARTMENT
John Reid, Jr., Architect

Fairmount Schools (pages 68 and 69), and imagine the effect on their undeniably unsympathetic character of lines of trees along the changes of grade. The larger schools are on the whole somewhat less flexibly handled than the smaller ones. There is a rather rigid insistence on the typical five-bay classroom windows; and certain of the architectural details have the air of forcible assembling rather than of natural composition. But even the least successful of the schools so far surpasses the previous San Francisco standards for such buildings that any attempt at detailed fault-finding would appear ungracious.

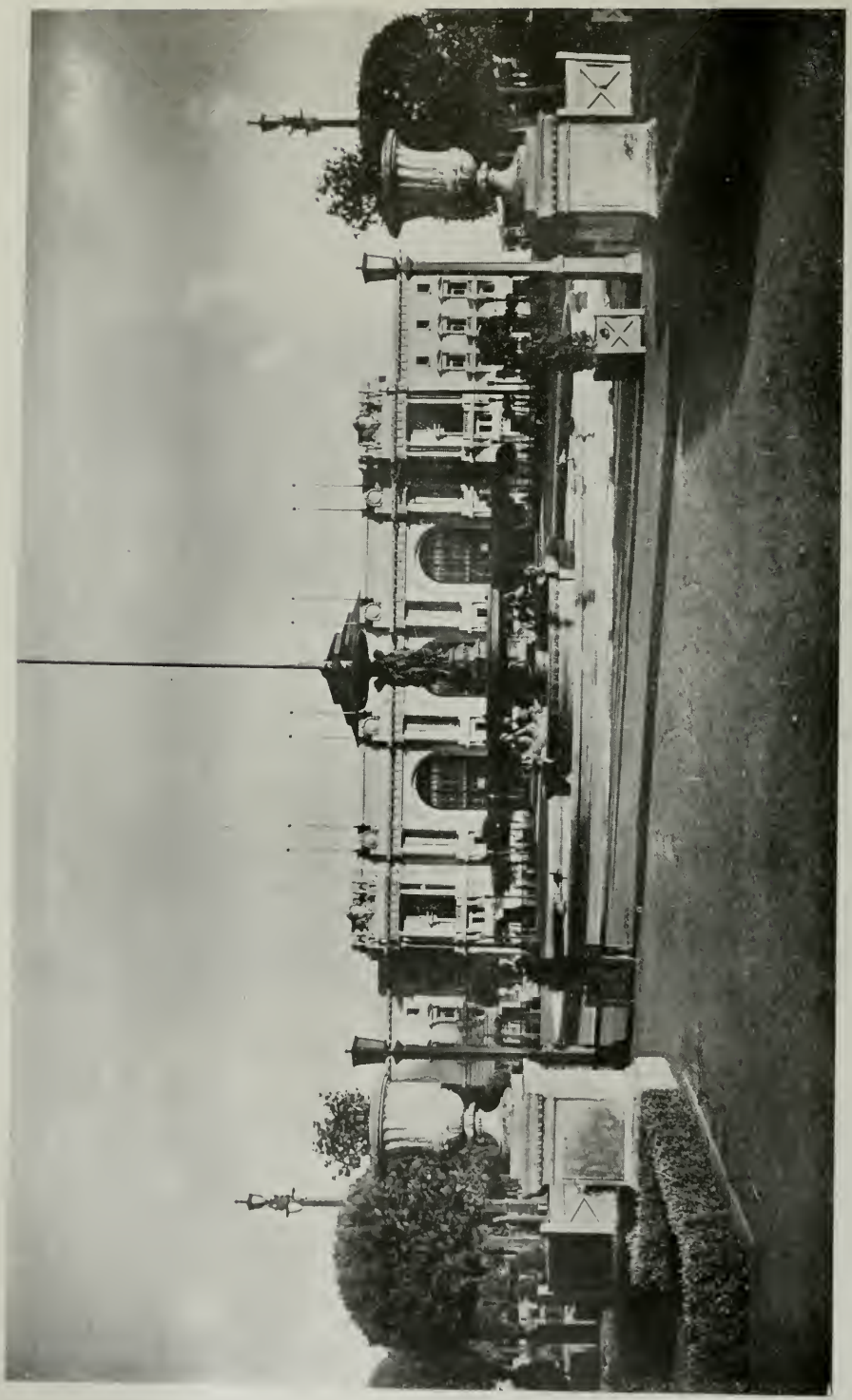
The preliminary drawings of the country house in San Mateo county

(pages 84 and 85) foreshadow a most interesting development. The handling of the irregular plan, dictated by considerations of contour and view, likewise that of the irregular masses of the elevations, is characterized by a freedom and a spontaniety which Mr. Reid has not always attained. There is also observable here an increased sensitiveness to the spirit of the country in which the building lies. It should be set down as one of the limitations of Mr. Reid's architecture that it has tended toward a certain abstractness; that is to say, its forms and compositions seem to have been developed with reference to the canons of

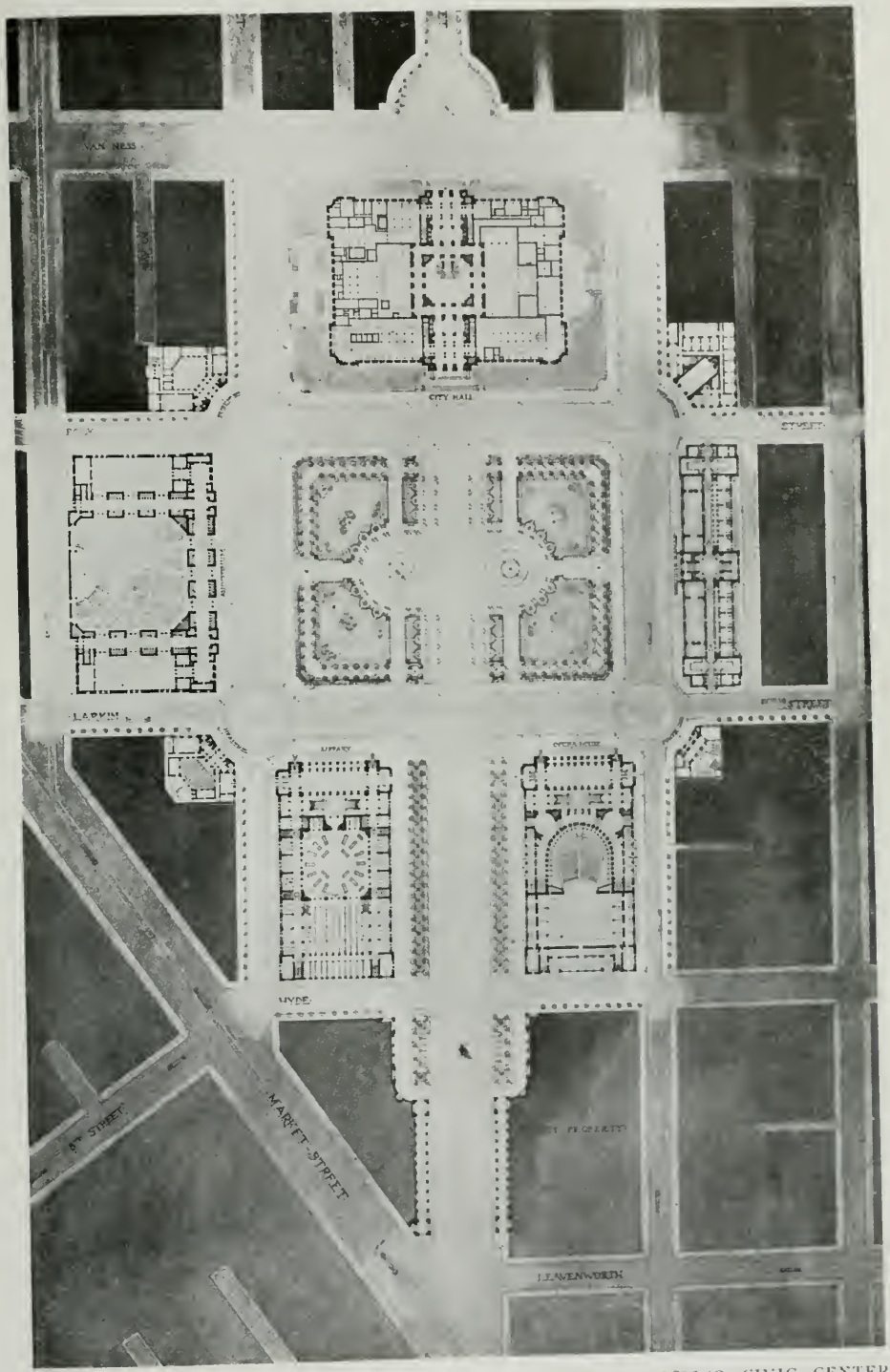
GARAGE, HUNTING LODGE, EUREKA, CALIFORNIA
John Reid, Jr., Architect

pure design only, and not actuated to any large degree by the peculiarities of its particular locality. There is in this house a touch of the California atmosphere which gives it an enhanced sense of actuality. The drawings reproduced are Mr. Reid's own progress studies in the development of the scheme. One may thus appreciate his close personal touch with the work which passes through his office.

The charm of the architectural drawings through which many of Mr. Reid's buildings are presented will not have escaped notice. It is a pleasure to credit these drawings to the hand of Mr. Raymond W. Jeans.



CIVIC CENTER PLAZA AND EXPOSITION AUDITORIUM, SAN FRANCISCO
JOHN GALEN HOWARD, FREDERICK H. MEYER, AND JOHN REID, JR., ARCHITECTS




PLAN, SAN FRANCISCO CIVIC CENTER
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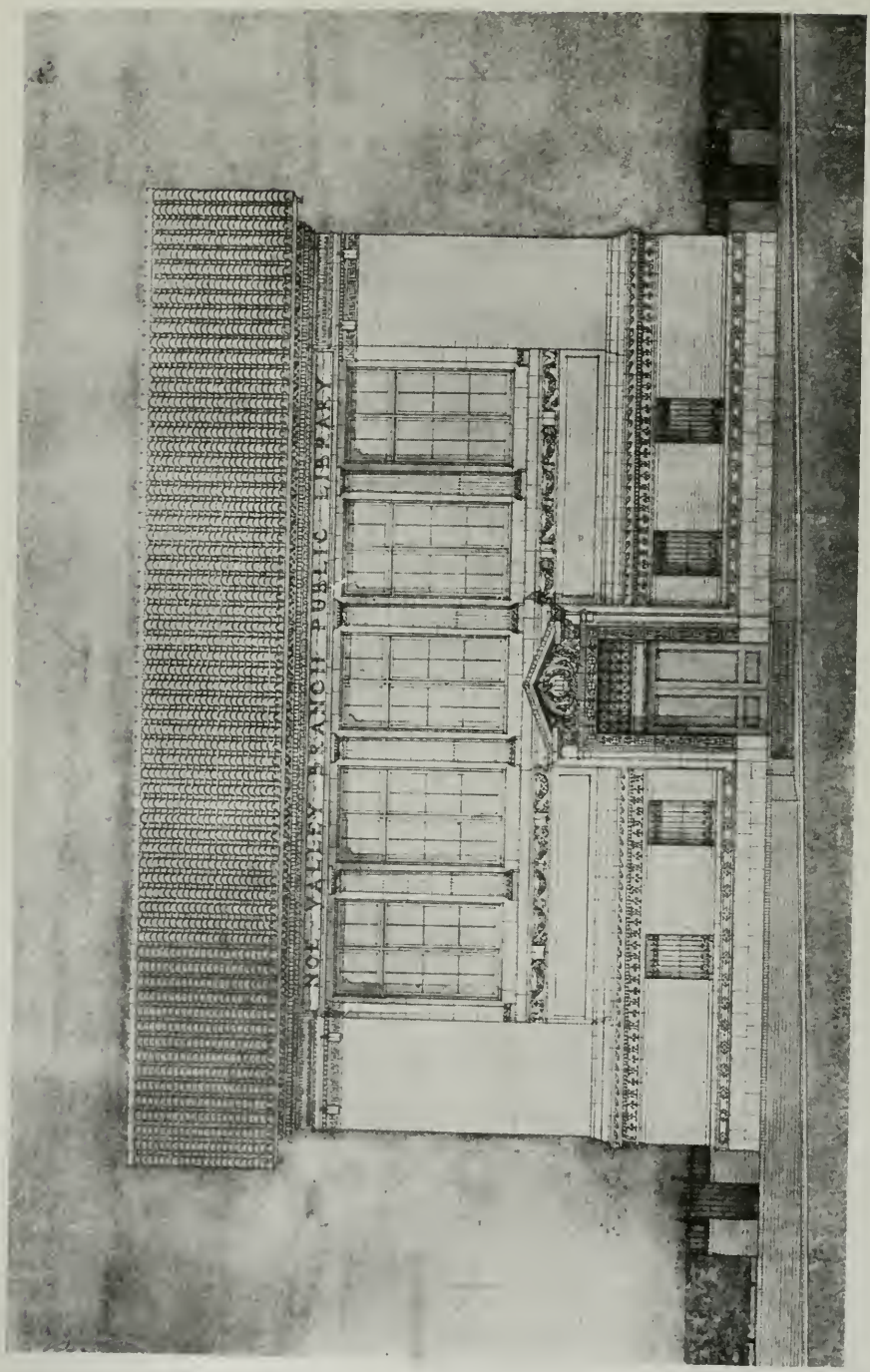
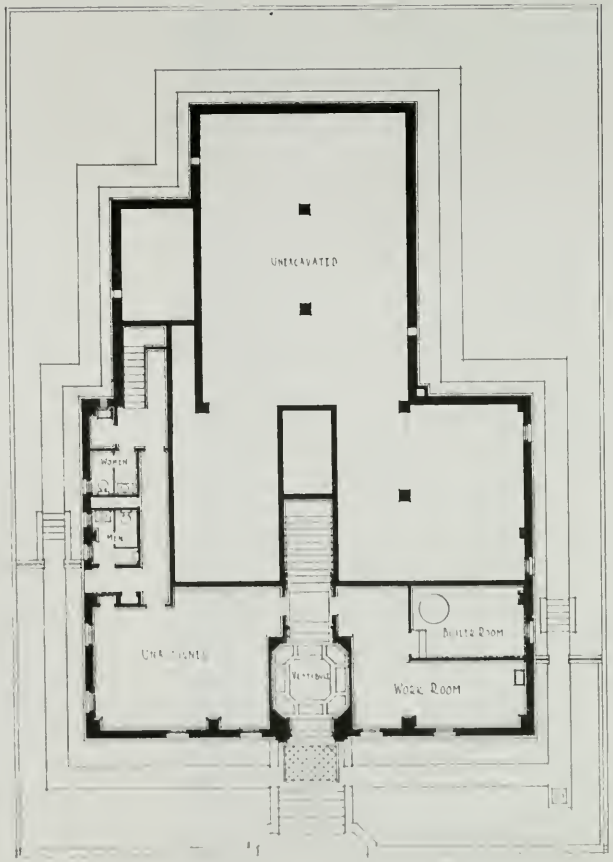



PRELIMINARY DRAWING, NOE VALLEY LIBRARY
SAN FRANCISCO JOHN REID, JR., ARCHITECT

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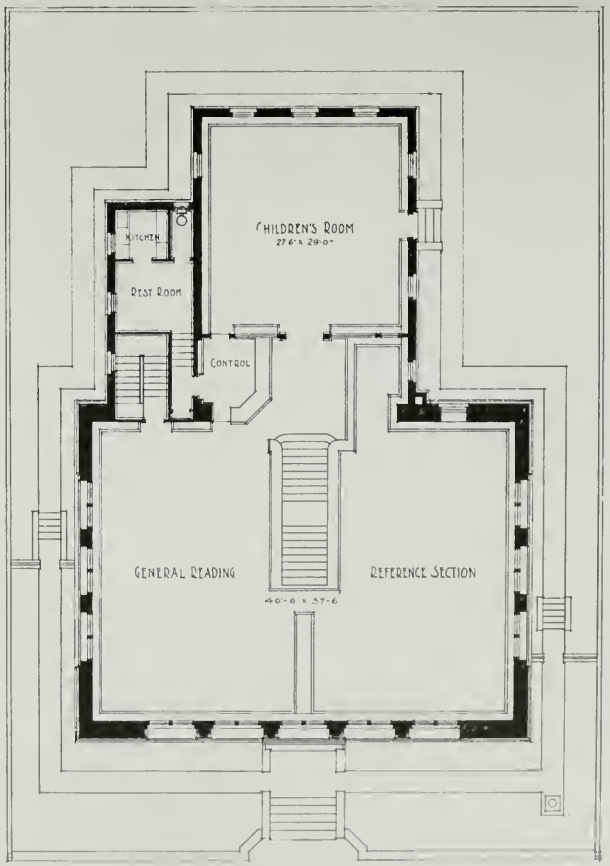


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John Reid, Jr., Architect

DETAIL OF FRONT, NOE VALLEY LIBRARY
JOHN REID, JR., ARCHITECT

ENTRANCE, CENTRAL EMERGENCY HOSPITAL
SAN FRANCISCO JOHN REID, JR., ARCHITECT

HIND BUILDING, SAN FRANCISCO
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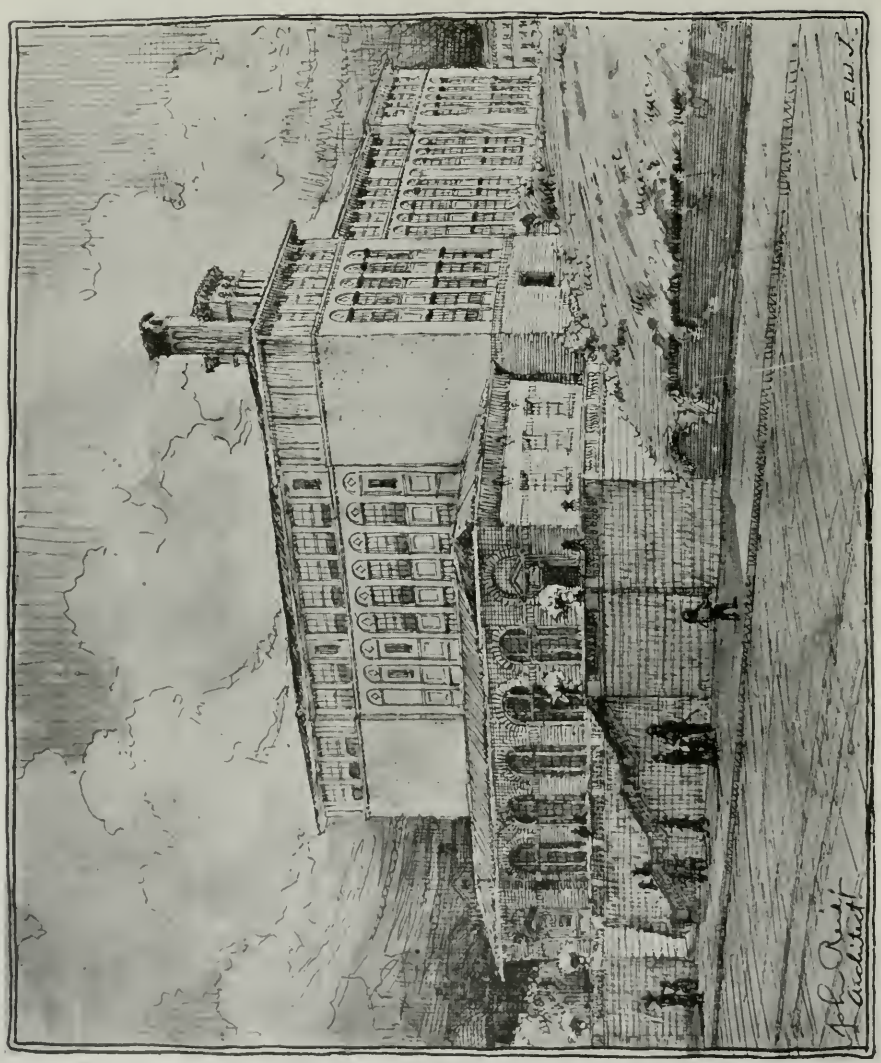
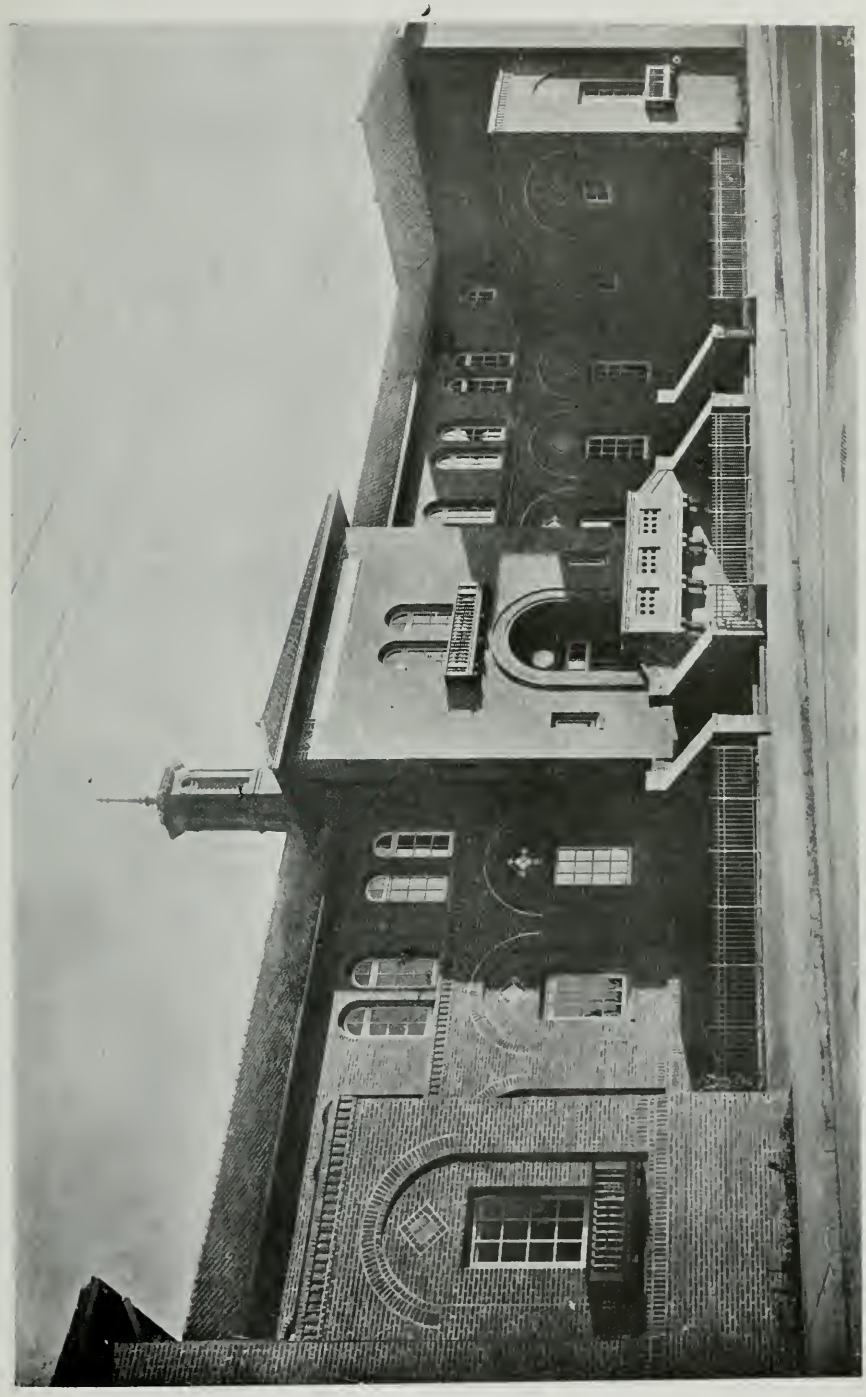


NEW GRANT SCHOOL, SAN FRANCISCO
JOHN REID, JR., ARCHITECT

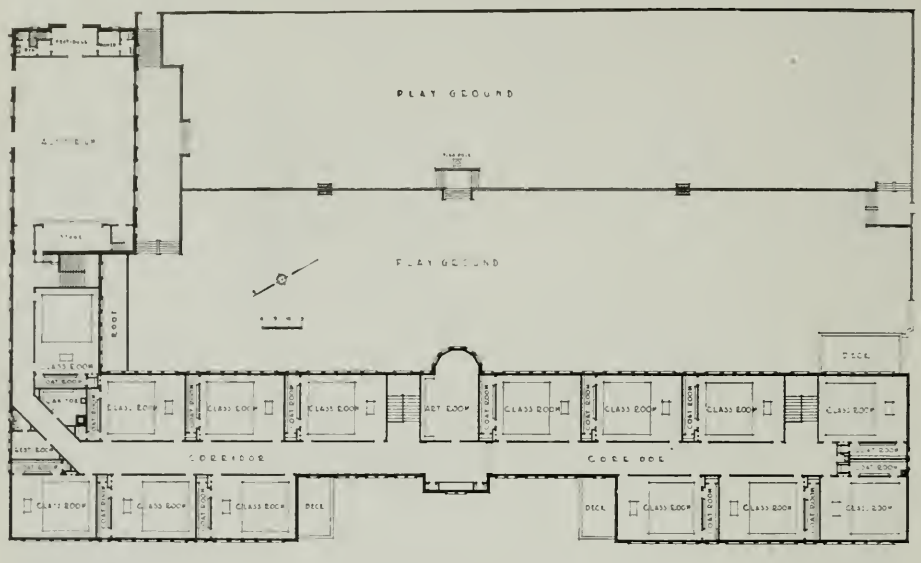


ENTRANCE, MONROE GRAMMAR SCHOOL, SAN FRANCISCO
JOHN REID, JR., ARCHITECT

ENTRANCE LOBBY AND CORRIDOR, MONROE GRAMMAR SCHOOL, SAN FRANCISCO

MANUAL TRAINING ROOM, SCHOOL FOR SUBNORMAL CHILDREN, SAN FRANCISCO
John Reid, Jr., Architect

DETAIL ON YARD, MONROE GRAMMAR SCHOOL
SAN FRANCISCO JOHN REID, JR., ARCHITECT

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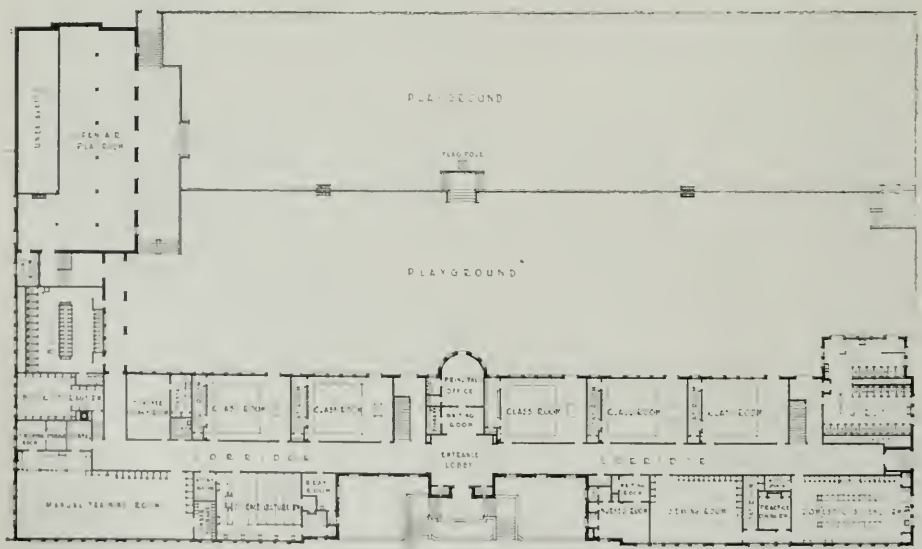


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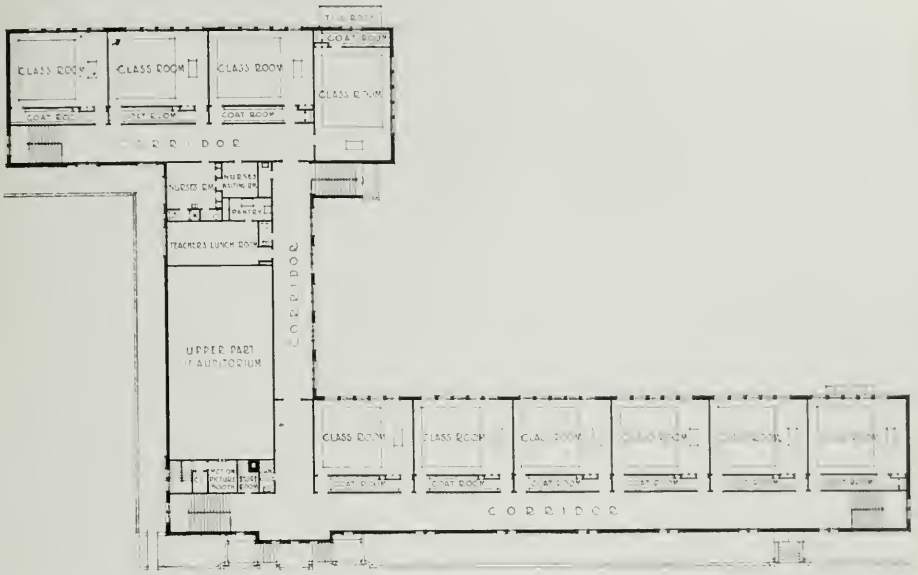
MONROE GRAMMAR SCHOOL, SAN FRANCISCO
John Reid, Jr., Architect

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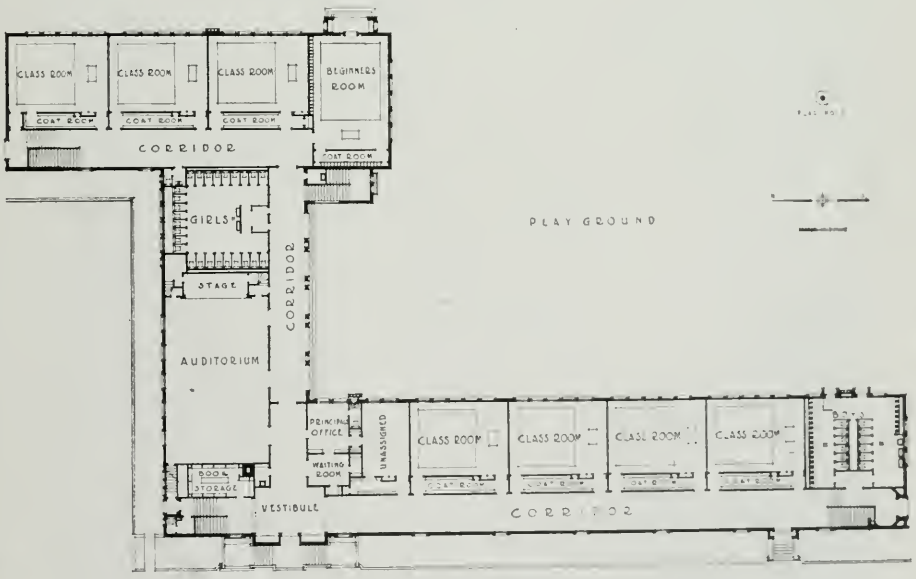


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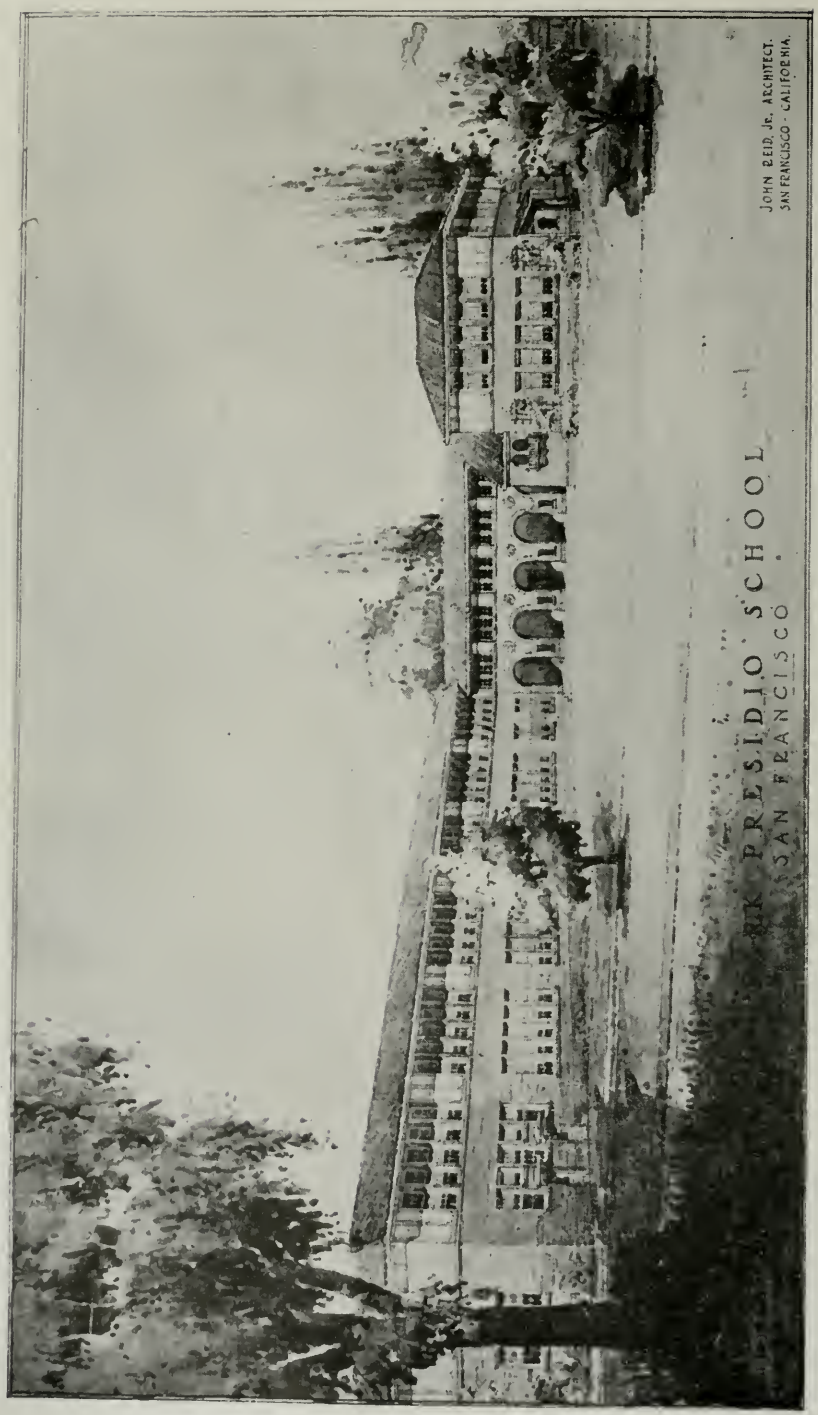
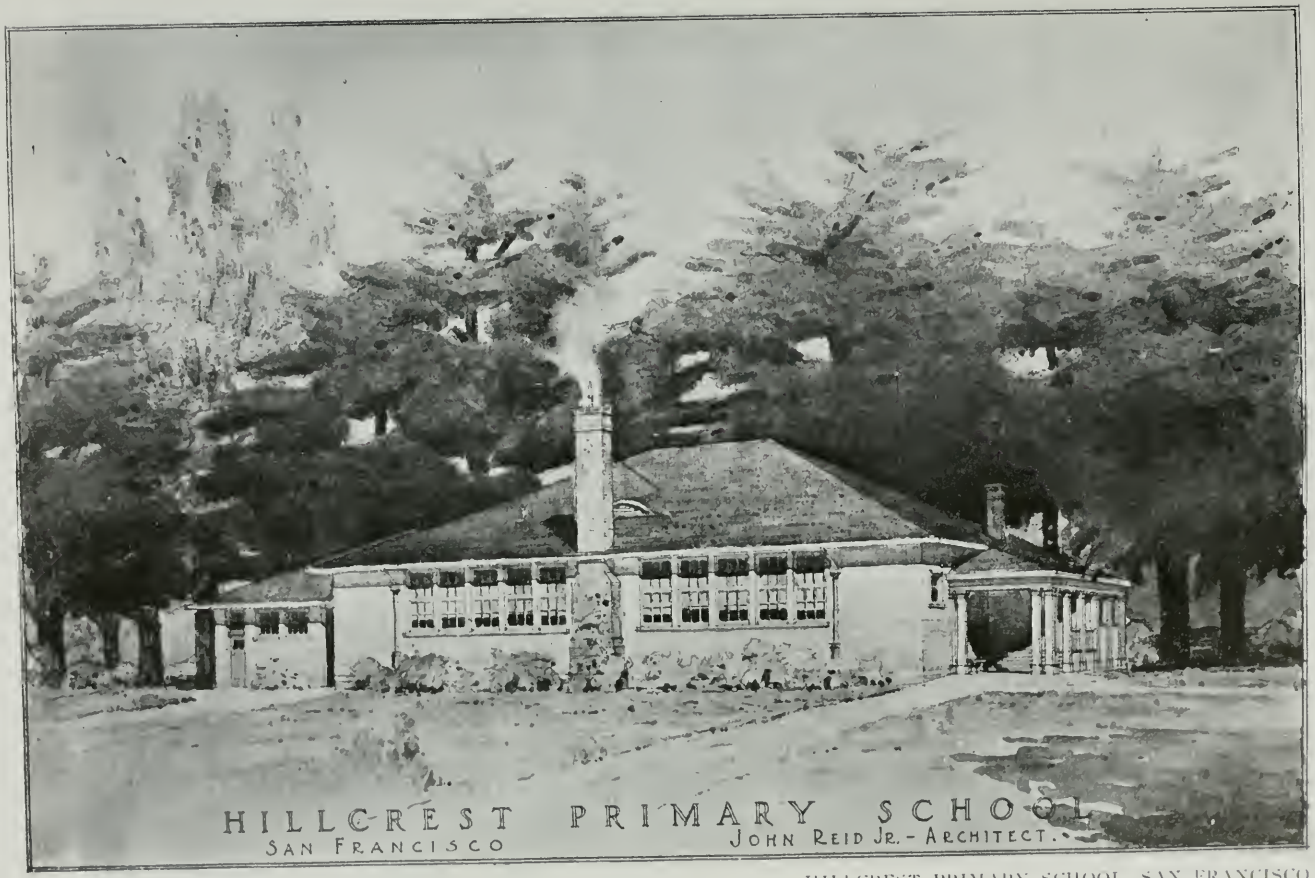
PARK PRESIDIO SCHOOL, SAN FRANCISCO
John Reid, Jr., Architect




PARK PRESIDIO PRIMARY SCHOOL, SAN FRANCISCO
JOHN REID, JR.,
ARCHITECT




HILLCREST PRIMARY SCHOOL, SAN FRANCISCO
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ENTRANCE, FAIRMOUNT SCHOOL, SAN FRANCISCO
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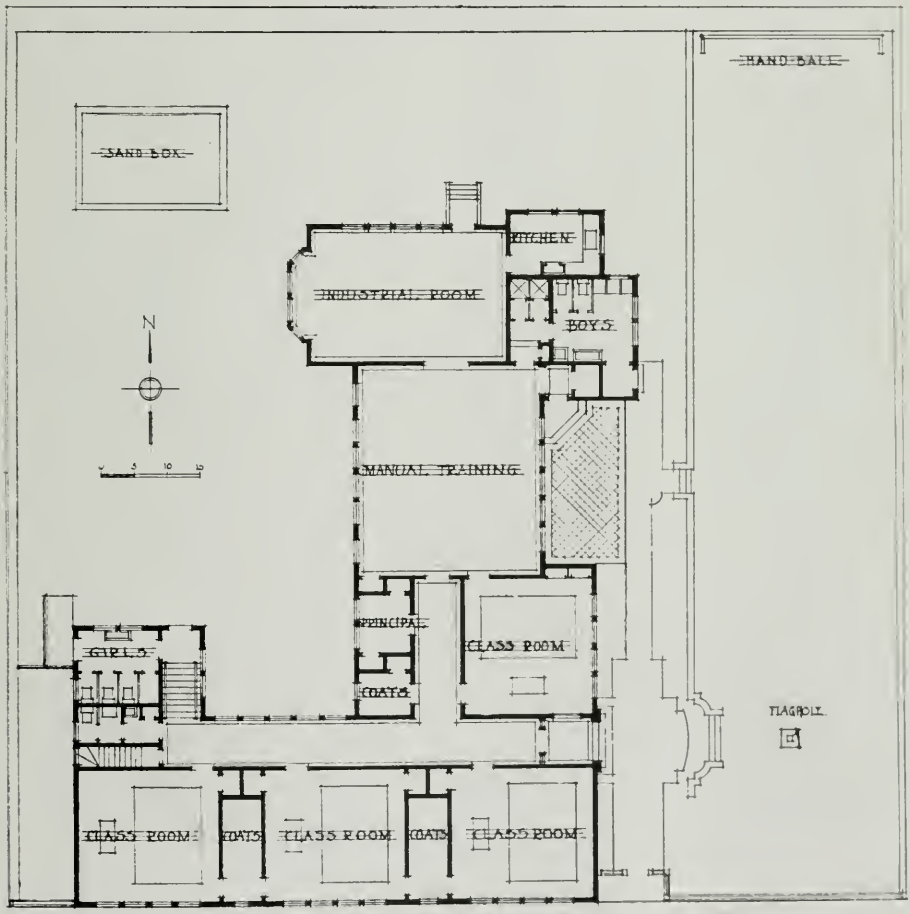
ENTRANCE, FAIRMOUNT SCHOOL, SAN FRANCISCO
JOHN REID, JR., ARCHITECT

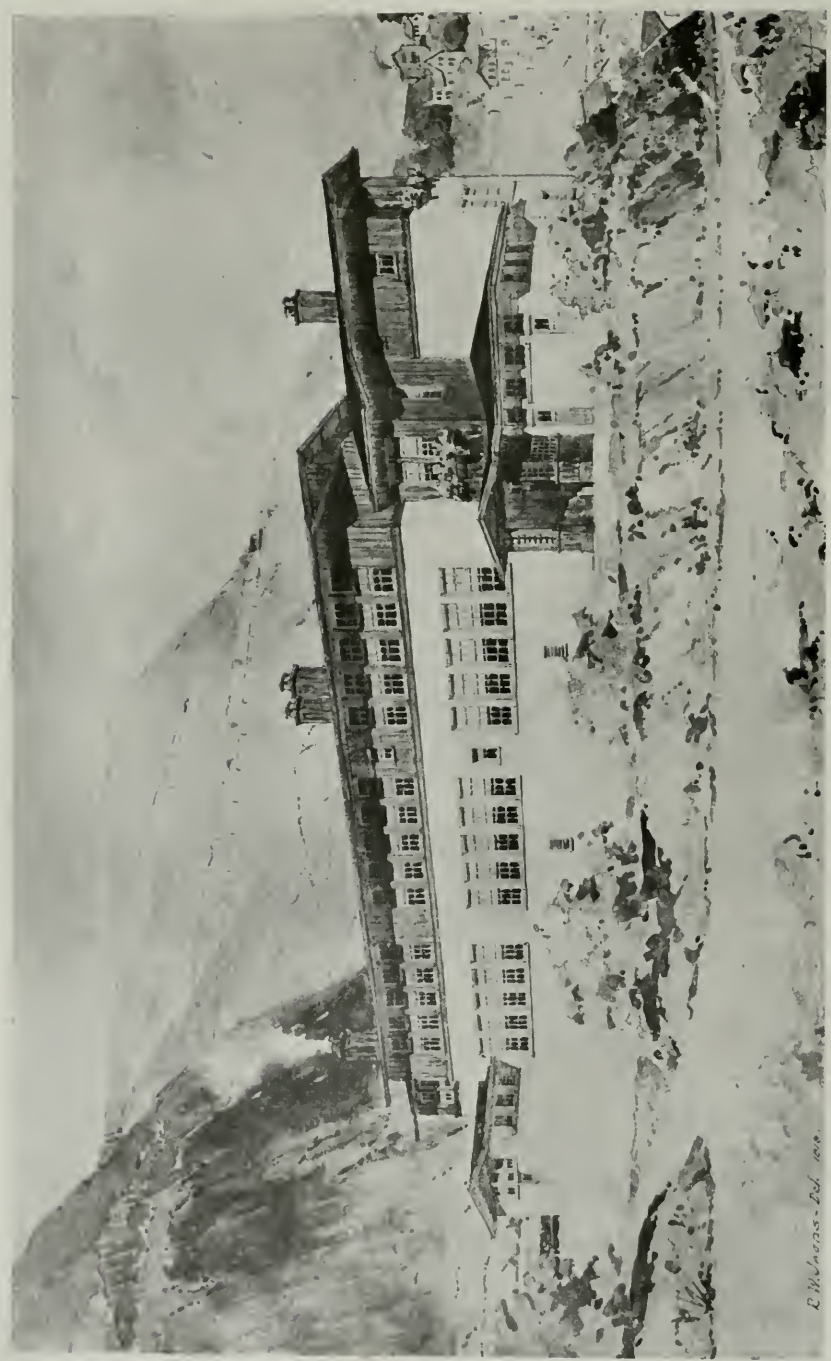
YARD, MONROE GRAMMAR SCHOOL, SAN FRANCISCO

ENTRANCE, SCHOOL FOR SUBNORMAL CHILDREN, SAN FRANCISCO
John Reid, Jr., Architect

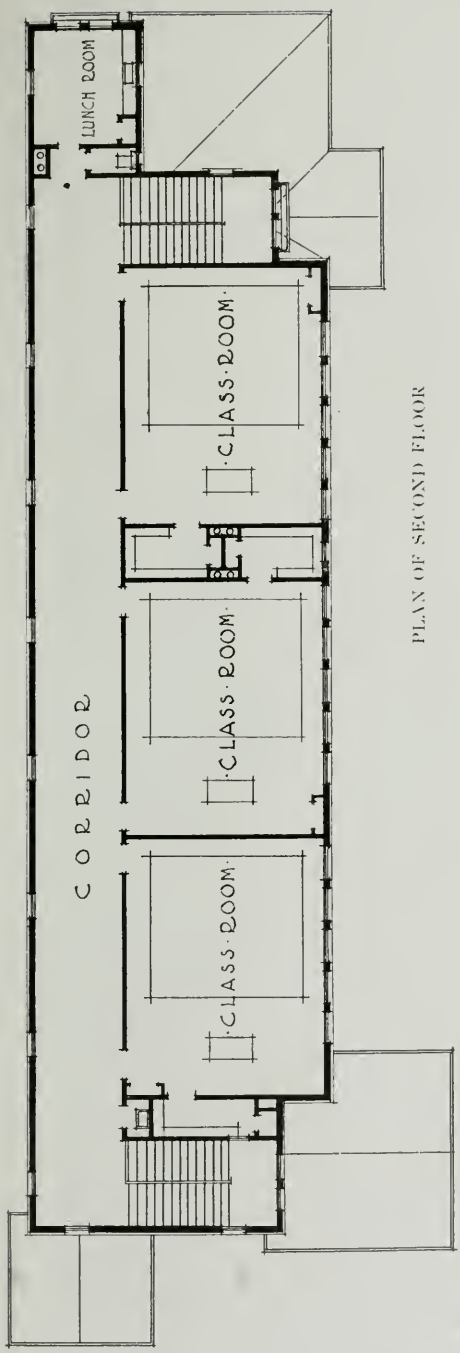
YARD, FAIRMOUNT SCHOOL, SAN FRANCISCO




PLAN, SCHOOL FOR SUBNORMAL CHILDREN, SAN FRANCISCO
John Reid, Jr., Architect

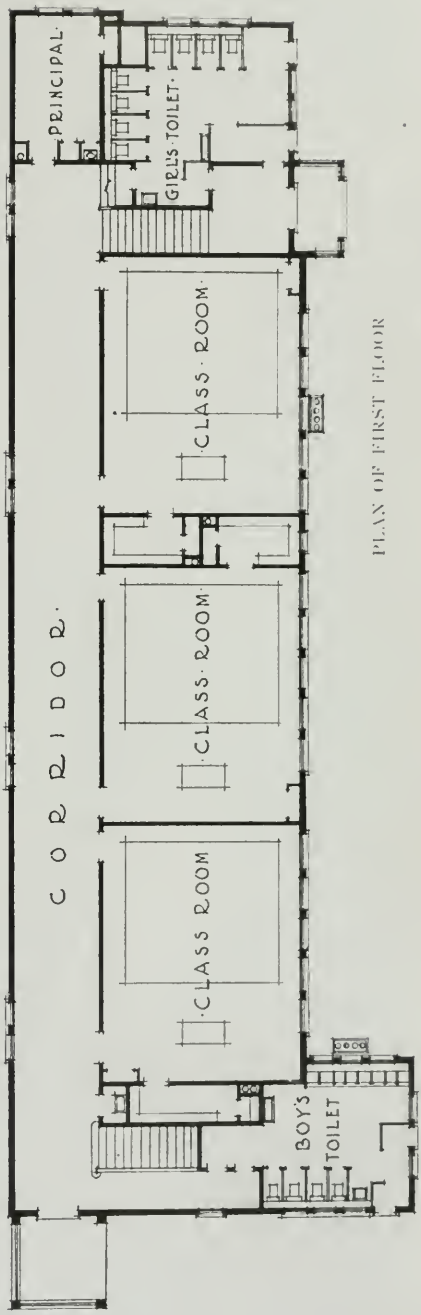


TWIN PEAKS PRIMARY SCHOOL, SAN FRANCISCO
JOHN REID, JR., ARCHITECT




PLAN OF SECOND FLOOR

IRON ALLEY

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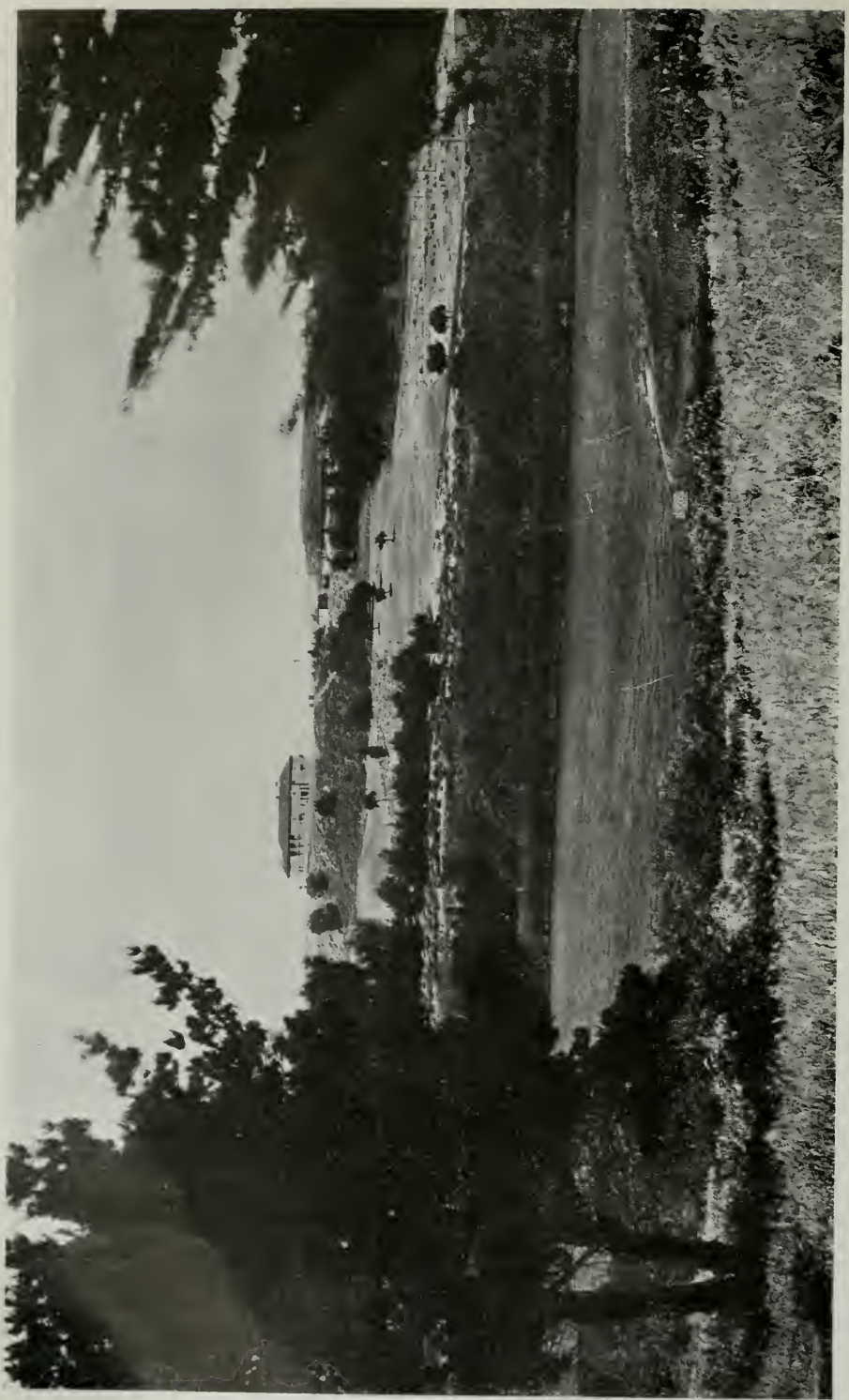
TWIN PEAKS PRIMARY SCHOOL, SAN FRANCISCO
John Read, Jr., Architect

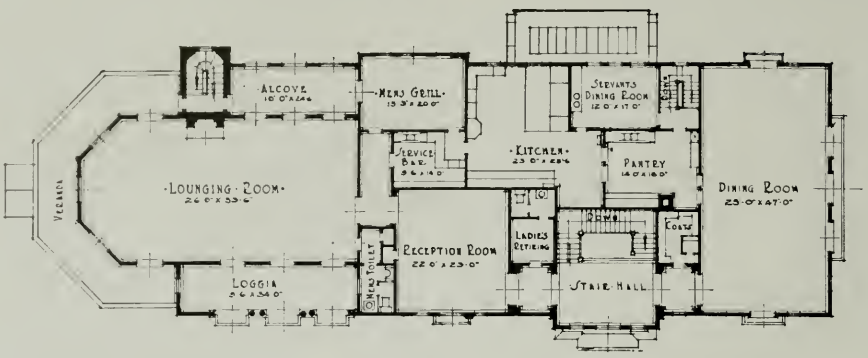


DISTANT VIEW, LAKESIDE GOLF CLUB, SAN FRANCISCO
JOHN REID, JR., ARCHITECT

LAKESIDE GOLF CLUB, SAN FRANCISCO
JOHN REID, JR., ARCHITECT

ENTRANCE, LAKESIDE GOLF CLUB, SAN FRANCISCO
JOHN REID, JR., ARCHITECT

VESTIBULE, LAKESIDE GOLF CLUB, SAN FRANCISCO
JOHN REID, JR., ARCHITECT

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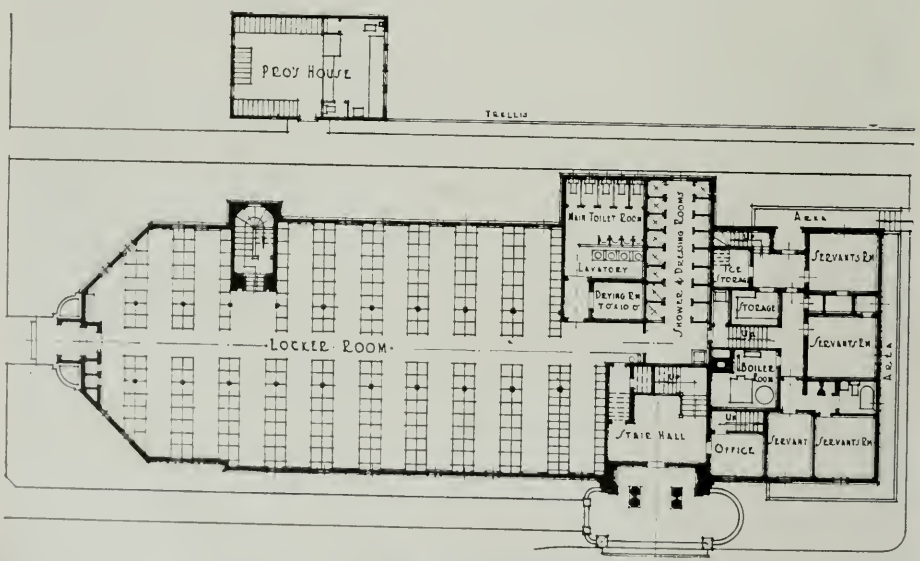
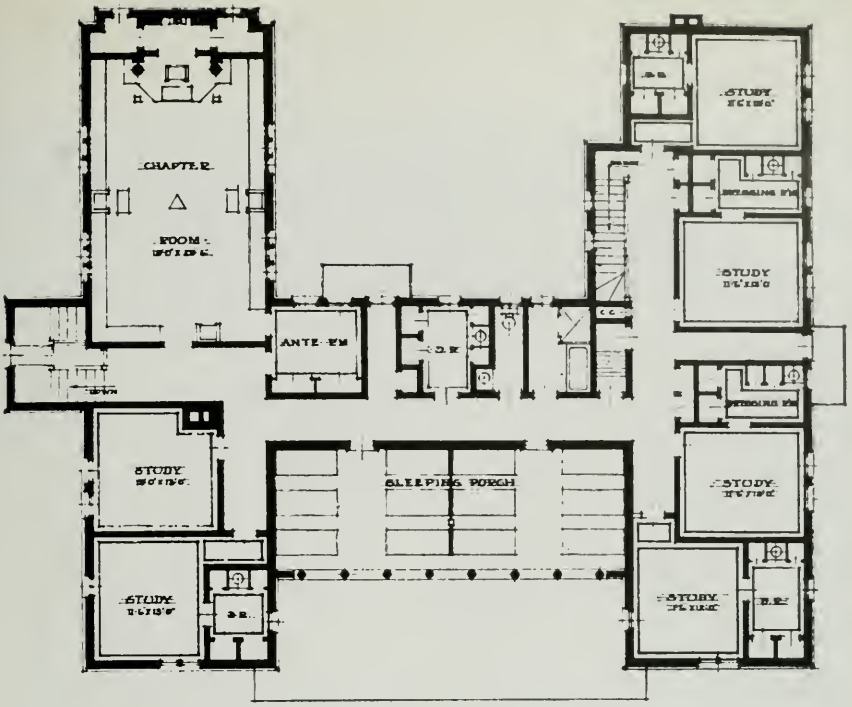
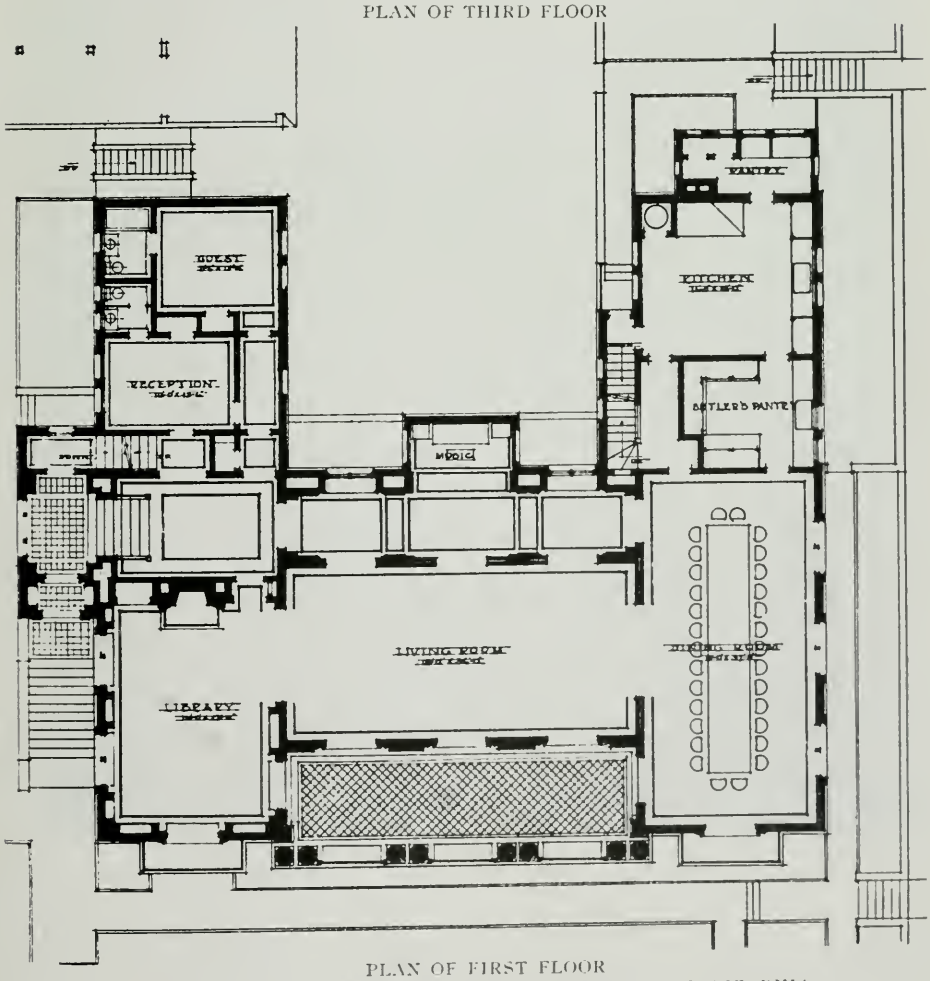



PLAN OF GROUND FLOOR

LAKESIDE GOLF CLUB, SAN FRANCISCO
John Reid, Jr., Architect



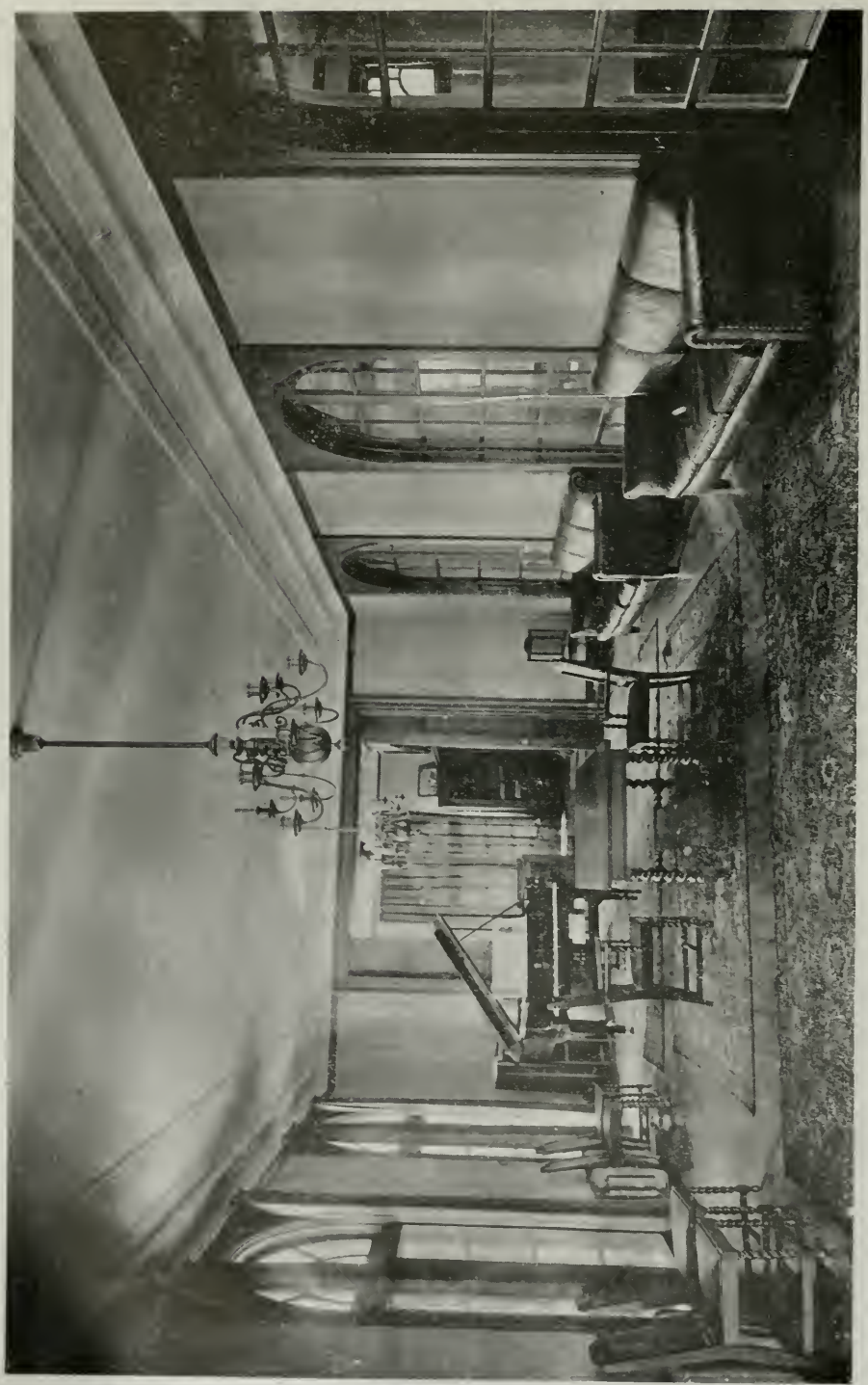

PLAN OF THIRD FLOOR




PLAN OF FIRST FLOOR

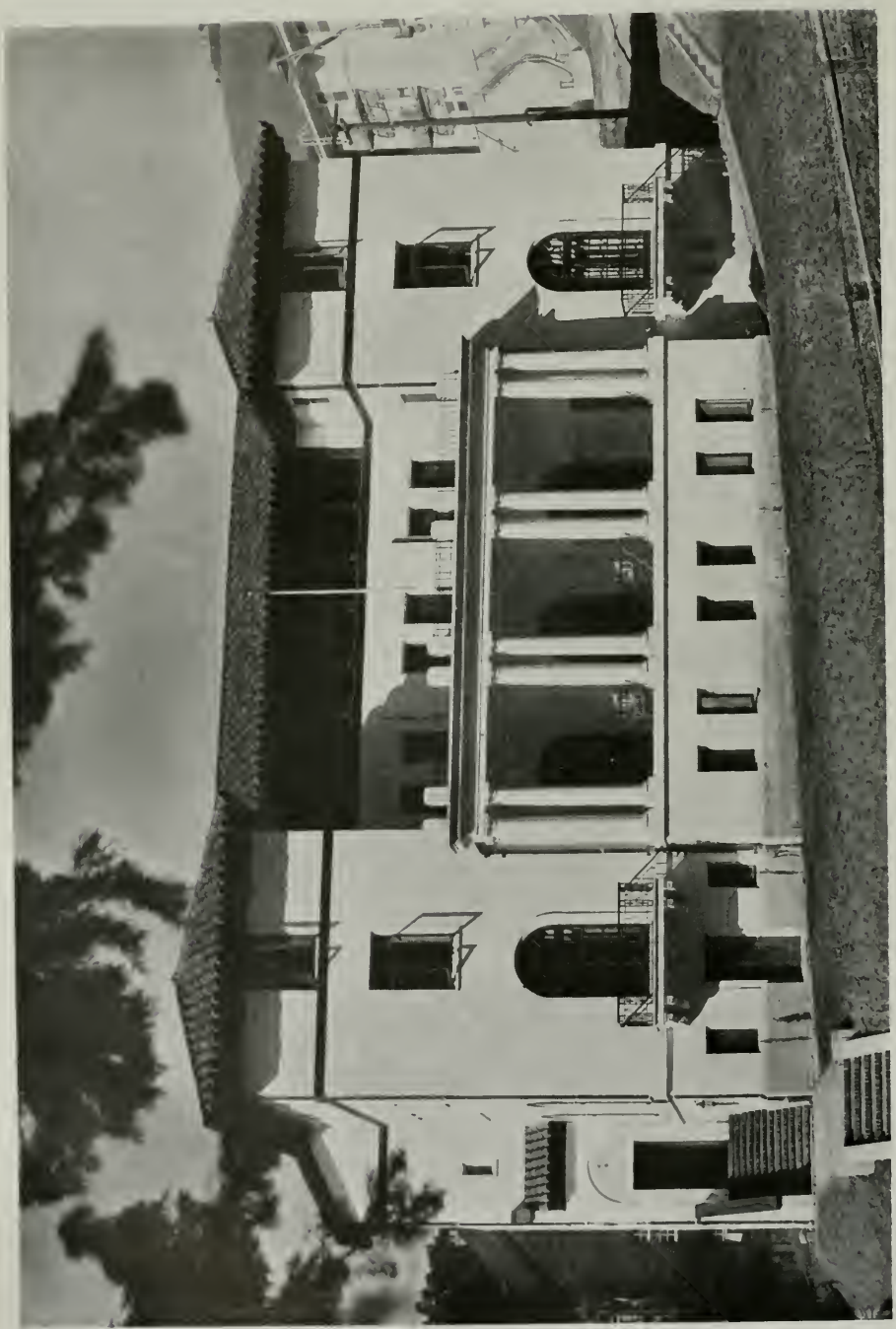
PHI DELTA THETA CHAPTER HOUSE, BERKELEY, CALIFORNIA

John Reid, Jr., Architect



LIVING ROOM, PHI DELTA THETA CHAPTER HOUSE,
BERKELEY JOHN REID, JR., ARCHITECT

LIBRARY, PHI DELTA THETA CHAPTER HOUSE,
BERKELEY. JOHN REID, JR., ARCHITECT



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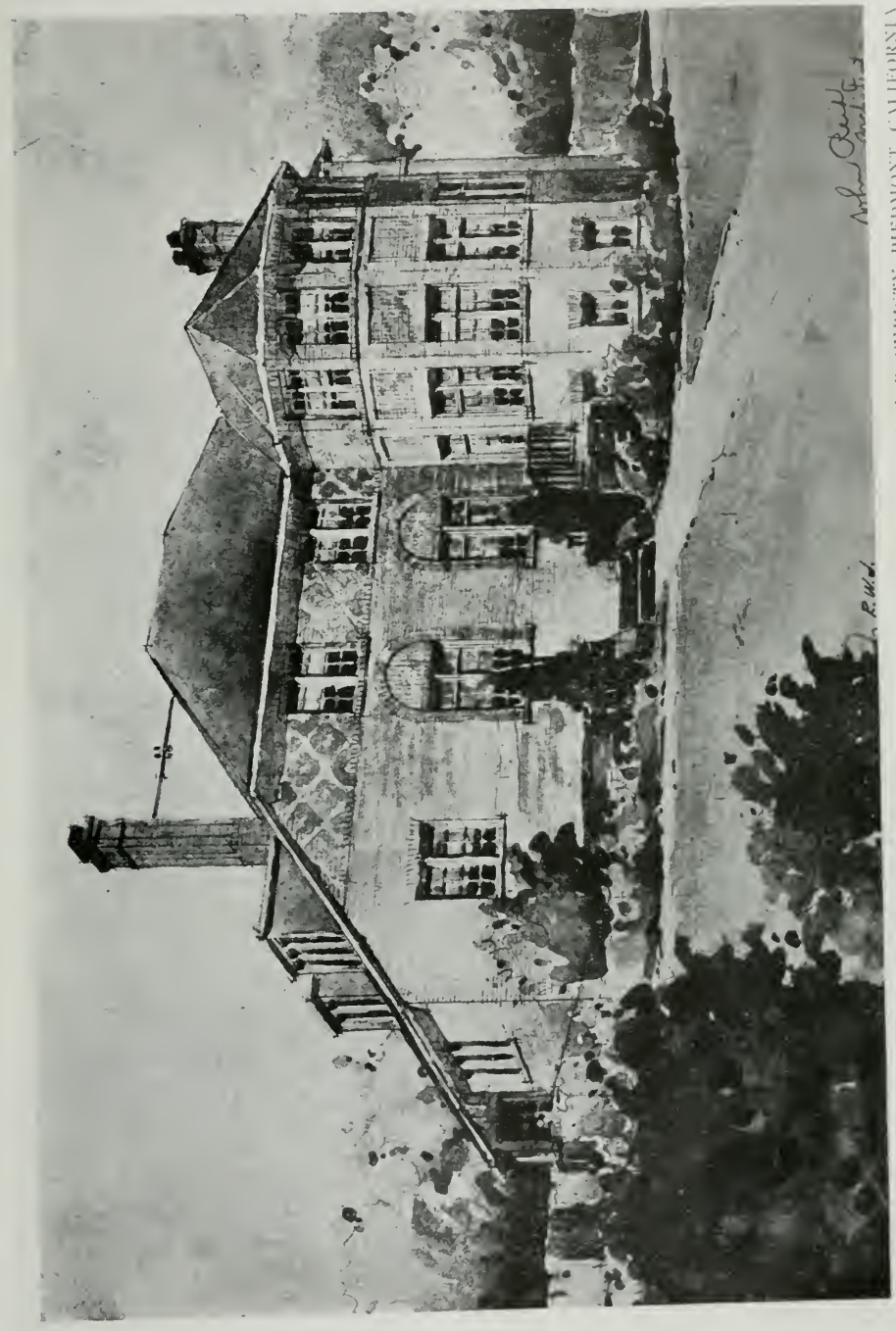
JOHN REID, JR., ARCHITECT



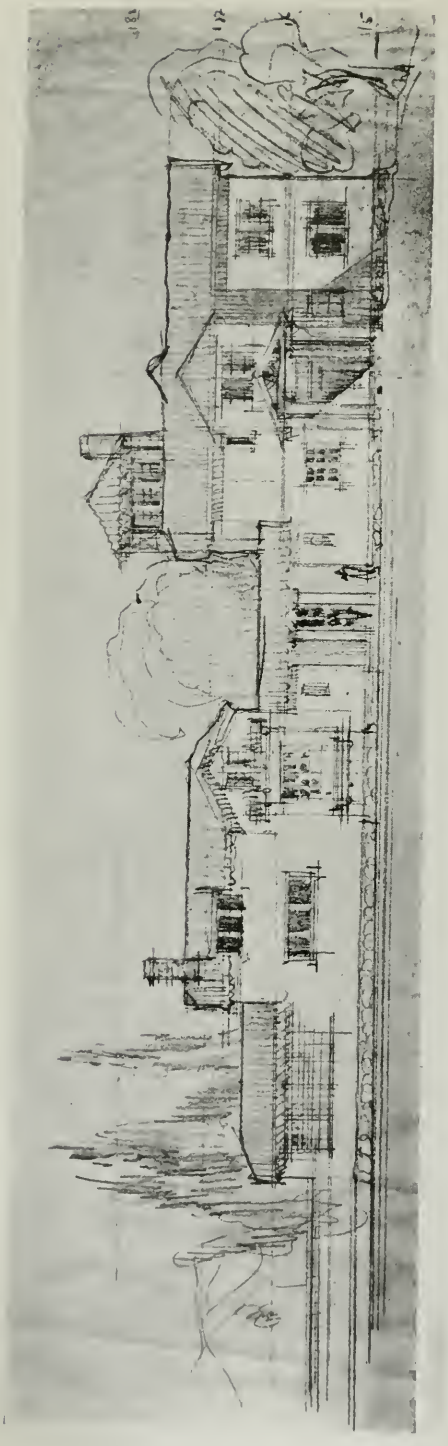
RESIDENCE FOR MR. J. R. CHRISTY, PIEDMONT, CALIFORNIA
JOHN REID, JR., ARCHITECT

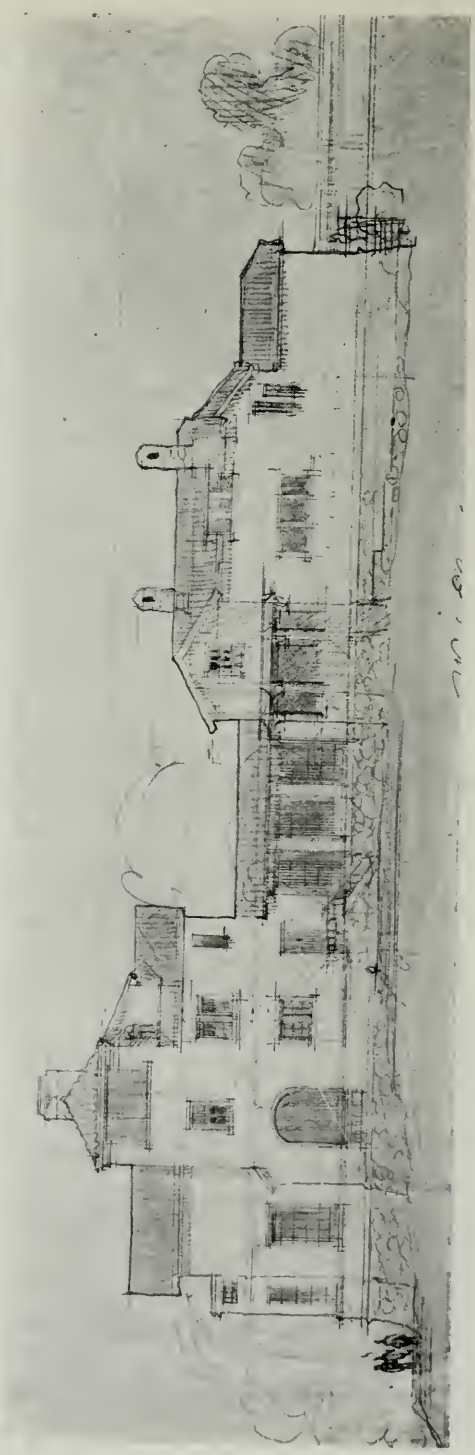
BEFORE ALTERATIONS

AFTER ALTERATIONS

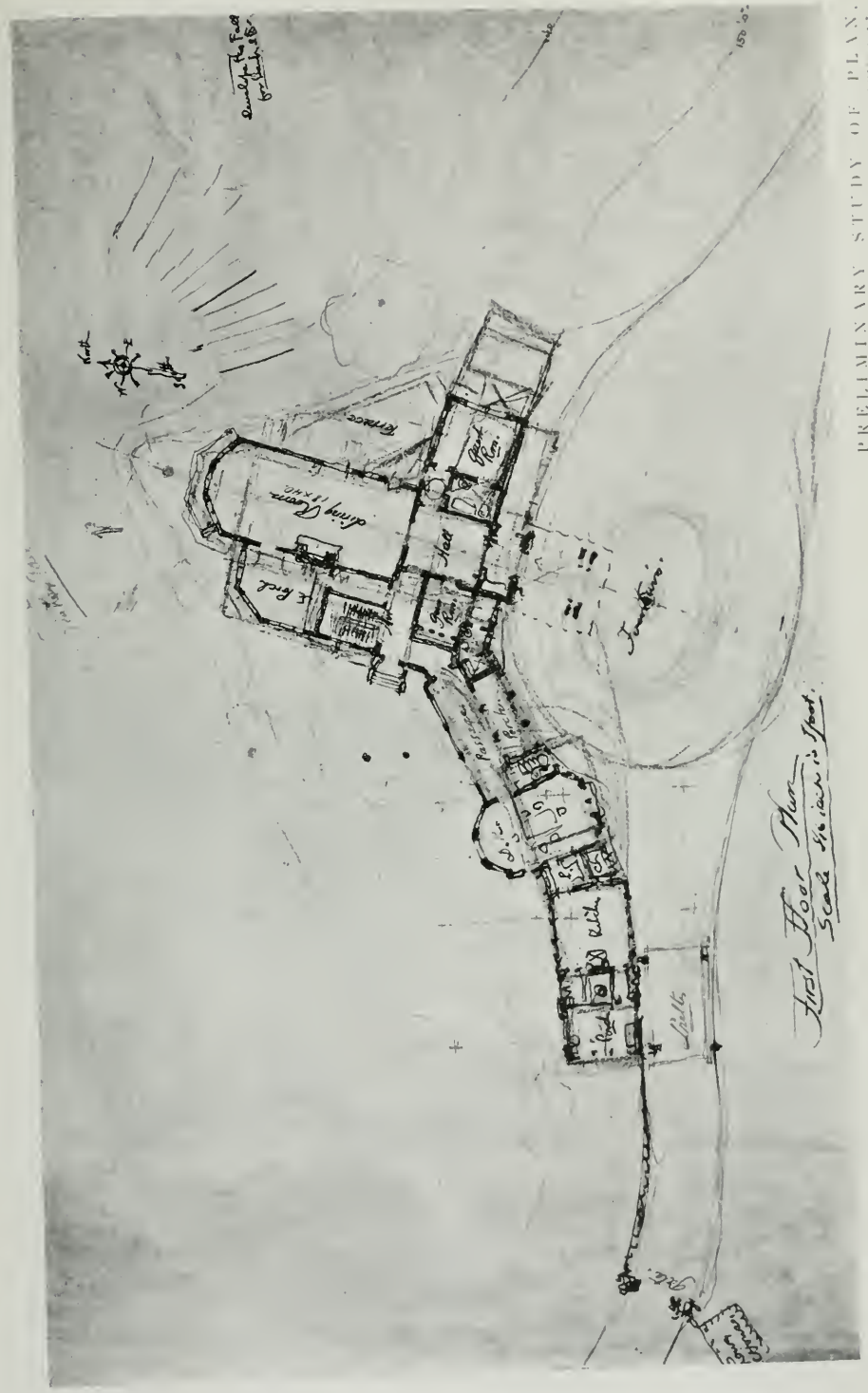
ALTERATIONS TO RESIDENCE AT 3839 JACKSON STREET, SAN FRANCISCO
John Reid, Jr., Architect

VESTIBULE—ALTERATIONS TO RESIDENCE AT 3839 JACKSON STREET, SAN FRANCISCO JOHN REID, JR., ARCHITECT





PRELIMINARY STUDIES OF ELEVATIONS, COUNTRY HOUSE, SAN MATEO COUNTY, CAL. JOHN REID, JR., ARCHITECT




PRELIMINARY STUDY OF PLAN.
COUNTRY HOUSE, SAN MATEO COUNTY, CAL.
JOHN REID, JR.,
ARCHITECT

# Architects' Registration Law in Pennsylvania

PENNSYLVANIA has a law providing for the registration of architects. It was enacted at the last session of the legislature of that state, became effective on July 1, 1919, and is now being put into operation. The law differs in many respects from the architects' license laws enacted in other states. Under it a certificate of registration costs $20 and it may be renewed annually during the month of June without any further payment. If a certificate is not renewed within the prescribed time it automatically lapses and a fee of $10 is charged for a new certificate. The expenses of administering the law, including the salaries of the board of examiners, are paid out of the funds of the state treasury, and are limited to $3,000 a year. The board of examiners consists of five members, each of whom receives $10 per day and an allowance for necessary expenses while attending meetings or conducting examinations.

The law reserves to registered architects the sole right to the use of the title architect or the abbreviation R. A., meaning registered architect. Any person who was engaged in the practice of architecture for one year prior to the approval of the law may continue to practice as an architect without a certificate of registration for a period of five years, provided an affidavit setting forth the facts is filed with the board of architects, but he cannot be styled or known as a registered architect. All other persons desiring to practice as architects must secure a certificate of registration. All applicants must have completed a course in high school or pass an examination in mathematics, history and language. Diplomas or certificates will be accepted in lieu of academic examinations.

Before receiving a certificate the applicant must pass an examination in such technical and professional courses as may be established by the board of examiners. These courses are not specified in the law, but are to be determined solely by the board of examiners. In lieu of such technical examination the board may accept a diploma or certificate from an approved architectural college, provided the applicant has had three years' experience in an architect's office. The board may also grant a certificate without examination to anyone engaged in the practice of architecture for one year prior to the approval of the act or anyone engaged in the practice of architecture as an employe for five years, provided application for a certificate is made within two years and proof of competency and character is shown. Certificates may also be issued without examination to architects licensed or registered in other states.

Any certificate issued under the law may be revoked for "incompetency or recklessness or for neglect of duty in the practice of architecture or for dishonest practice on the part of the holder thereof," but unanimous action of the board is required. An architect whose certificate has been revoked may file an application for a new certificate after a period of six months. Every holder of a certificate is required to sign all drawings as a registered architect. Violation of the law is made a misdemeanor punishable by a fine of $50 to $100 for the first offense and a fine of $200 to $500 or imprisonment in jail for not more than six months, or both, for the second offense.

The law does not prevent others than registered architects making plans as the following clause indicates: "This act shall not be construed to prevent persons other than architects from filing applications for building permits or obtaining such permits; nor shall it be construed to prevent such persons from designing buildings and supervising their construction, provided their drawings are signed by the authors with their true appellation as engineer or contractor or carpenter or et cetera, but without the use in any form of the title of architect."

# What Is a Fair House Rent?

By LESLIE H. ALLEN, in Architecture and Building

LANDLORDS all over the country are in trouble with their tenants, because they find it necessary to raise rents. Ordinarily it is a mere question of supply and demand, and many a landlord has boosted his figures about as much as he thought the "traffic would bear." But when we examine the real facts in the situation, what do we find? While there have been many cases of apparent extortion, the fact remains that rents have increased, on the average, not over 20 per cent in a period which has seen foods, clothing and other items of expense go up from 75 to 150 per cent. Because other things have increased in price is no reason for advancing rents. But how is the building owner situated with respect to operating costs on his property?

As a typical case, let us consider a two-family house built in 1900, which has five rooms downstairs and seven rooms upstairs. It cost the owner $6,500, of which $1,000 was land and $5,500 was house complete. He invested $3,000 cash and placed the other $3,500 on a mortgage. His assessment on the property was $5,000. What rent should he obtain from the two "halves" of the house?

The fact that he actually rented these two portions at $25 and $30 respectively, or a total of $55, has no direct bearing on the answer to the above question, for it furnished no evidence that the owner properly analyzed his costs or made adequate allowance for the future.

Let us examine the owner's costs and what ought to be his earnings, both in the light of prices and conditions as they existed in the first fifteen years of this century, what they are today and what promises to be tomorrow's scale.

His mortgage at 6 per cent (the prevailing rate in 1900 to 1915) would cost him $210 per year. His taxes at $20 per thousand per year would cost him $100. If we allow $25 for insurance and water, this makes standing fixed charges of $335 per year, which have been practically maintained year after year, with only slight upward changes during the past few months. His minor repairs, which may be estimated at about $20 a year under the old conditions are now at least $35 for identically the same amount of work. While the growing decay of the house would normally make repairs much more necessary today than ten or fifteen years ago, this figure of $35 will be used in the comparison. There is no janitor, and each tenant provides his own heat.

Any building owner who rents his property must pay from the rental thereof his mortgage interest, insurance and water rates and the minor repairs necessary from time to time. Ordinarily those are the only items considered in arriving at a proper rental figure; but the owner, who is something of a financier—using the word in the most commendatory sense—looks farther ahead than this. He knows that the outside of his house requires painting every three years; that the inside requires painting and papering every ten years. He knows that in twenty years, more or less, he will have to put in new furnaces, put on a new roof and thoroughly overhaul his entire system of plumbing. It is these items of infrequent occurrence, but of large aggregate amount, which the ordinary small house owner or landlord fails to appraise or appreciate until they strike him a knock-out blow by their sudden necessity.

NOTE.—Mr. Allen is associated with the Aberthaw Construction Company of Boston, which had the contract to build the $50,000,000 ship-building plant in Alameda, and which contract was cancelled with the signing of the armistice.

The cost of painting the outside of the house, which would have been about $150 in the earlier years, would be around $320 today. The cost of papering and painting the inside has likewise advanced from about $300 to $500. The installation of two new furnaces, one for each tenant, would have cost about $200 ten or twelve years ago; today they cannot be put in for less than $300. If new roofing had been required before prices went up it would have cost about $220; today the figure would be nearer $360. New plumbing, insofar as renovation would be necessary at the end of twenty years, would today cost no less than $600, in place of the $400 before the war.

These items, occurring at infrequent intervals, would not show in the owner's balance sheet normally until they had to be met. The far-sighted owner, however, would make provision in advance, count up his cost, measure his cost and provide in his rent each year's pro rata share for each of these several items, which he knows are coming on as relentlessly as death and taxes. Under the earlier schedule of prices, as well as under the new, his yearly carrying charge for these items will be about as follows:—

| | 1910 | 1920 |
|---|---|---|
| Painting Outside of House | $ 50.00 | $107.00 |
| Painting and Papering Inside | 30.00 | 50.00 |
| New Heating Plant | 10.00 | 15.00 |
| New Roofing | 11.00 | 18.00 |
| Renovating Plumbing | 20.00 | 30.00 |
| Minor Repairs, Annual | 20.00 | 35.00 |
| | $141.00 | $255.00 |

During the period of low prices, now well behind us, the owner would have required $476 per year to cover his interest, taxes, insurance, water and the pro rata share of the renovations covered in the above table. In addition to this, he should have had enough income from the house to pay him a satisfactory percentage upon his investment of $3,000 cash. What should this percentage of return be?

He could have invested his money in the early years of this century in any one of a number of thoroughly good stocks which would have paid upwards of 6 per cent, and would have incurred no business risk—no risk of vacancies, no risk of dissolving in smoke and no risk of sudden damage from any one of a dozen sources which might affect the house. If it be assumed that insurance would take care of his fire risk, let us remember that while it might reimburse him for the actual cost of his building, it would not pay him his rental during the six months period of rebuilding, all of which would be a total loss. To cover all of these items, it would only be fair for the owner to obtain perhaps 10 per cent upon the actual cash investment of $3,000. Adding this $300 to his average annual outlay, we find that the rent of the two parts of the building under the old condition of prices should have brought some $776, or approximately $65 per month. This might be split into $30 and $35 respectively for the two parts of the house, or $5 more for each part than was actually charged in the case under consideration.

As the owner has not received what we shall have to recognize as an adequate rental during the earlier years of the life of his building, he has not been able to accumulate a fund for depreciation as the building gradually wears out. This being the case, his rebuilding or renovating program must necessarily come from capital rather than from previous earnings, and thus definitely add to his actual investment in the property—an addi-

tion which should share equitably in the annual earnings. Unless such a property has earned enough to provide in advance for contingencies, it is not on a healthy or thoroughly stable basis, and cannot be expected to act as a stimulant to the investment of money in such enterprises.

With the present high prices for every element entering into repairs and upkeep, the condition has changed considerably. In place of $141 for renewals, we find that such renewals as will have to be made from now on should be provided for at the rate of $255 per year. This makes his total fixed charges, so to speak, $590 per year. Adding his normal 10 per cent return on his investment, we have a total of $890 per year, or $74 per month. This might be apportioned at $34 and $40 for the two parts of the building, and even then does not cover the failure of past rentals to provide for the present high prices of roofing, plumbing and heating renewals. But the owner has carried the building more than fifteen years at a rate altogether too low to permit him to make the necessary renewals under the present prices, and still come out whole on his investment. If, therefore, he were to raise the rent to say $80, or $36 and $44 for the two parts of the house, which is not quite 50 per cent above the old rental figures, he would be obtaining for his property no more than it should bring him.

It will be noted that his $55 per month, or $660 per year, leaves him only $70 per year as return on his investment, when present prices are considered. This is only 2 1/3 per cent. Will any one argue that that is a fair return on money invested in an enterprise of ordinary business hazard?

There appears no indication that costs of operating and maintaining buildings will diminish. The cost of labor is continually rising, and it may well be that next year will see the upkeep figures decidedly higher than they are today, with a correspondingly greater deficit to be made up, due to insufficient rents in past years.

It may perhaps be unreasonable to expect tenants to look at the matter from this point of view. They have been accustomed to apportioning their outgo on the basis of a certain amount for rent and certain other amounts for other purposes. An increase of 40 or 50 per cent in one of the major items of expenditure will inevitably call forth strenuous protests. (We have been accustomed to consider rent as absorbing from one-fifth to one-fourth of wages and of small salaries.) Pure fairness, however, requires that both sides of the question be examined and that a rental be fixed which will be fair alike to the owner and to the tenant. The average tenant would reject with scorn any suggestion that he pay a portion of the proper rent and receive the balance as a charity gift. Yet that is exactly the situation, when he pays less than the property ought in all fairness to bring, however strong his disinclination to pay more than he has been paying in the past.

Because rents are now too low on buildings, and because of the tenants' opposition to permitting them to reach a logical figure, building for renting purposes holds no attraction for investors. The cost of construction is so much higher today than it was at the time our example was erected that a fair rental on a new building would be much higher than on the old. This is precisely a fact which tenants do not desire to recognize; but just as long as money has to be spent in the upkeep of a building, and to pay for taxes and insurance on the building, and interest on money borrowed for its erection, just as long will it be necessary to fix a rental high enough to cover all of these items, and leave a fair profit for the man who provides the housing accommodations.

# Insurance Engineering as a Factor in Architectural Service

A SUBJECT which has received very little consideration on the part of the average architect is that of providing safety against fire loss as a factor in design. There can be little doubt that the average person realizes that there is an excessive fire waste in this country and that considerable effort is being put forward by various interests toward encouraging the reduction or elimination of dangerous conditions. In fact, a definite profession known as insurance engineering has developed as a result of the need for studying building design and equipment from the fire hazard and insurance viewpoints.

Insurance engineering, broadly defined, is a service which involves a careful study of fire hazard in any building for the purpose of determining what methods of prevention and protection may be used to reduce the danger of loss by fire to the lowest minimum. Incidentally it is evident that such reduction of fire hazard in a building and the provision of proper protective measures should reduce the cost of insurance. As a matter of fact, this is the case, as the fire insurance underwriters have definite schedules in rating buildings. These rating schedules take into consideration the class of materials used, the design of a building in so far as protection against exterior communicative fires may be concerned, and the provision of fire walls to reduce dangerous areas. The underwriters' laboratories are known in a general manner to all architects, their specific purpose being to test various building materials and protective devices and to classify them according to their qualities of fire resistance and protective value.

To demonstrate the need of studying this subject as far as the architect is concerned we have but to quote the planning of the Equitable Building in New York City. It is fairly well known that the Equitable Building represents the highest achievement of fire safety in any building of its size in the world. When the first plans were drawn for this building a tentative insurance rate was quoted by the underwriters to whom the plans were tendered. The owners, however, wisely engaged the services of an experienced insurance engineer, who went over the plans carefully, making recommendations for the use of unburnable materials at many points; introducing protective features such as wire glass; sprinkler system at points of special hazard, such as kitchen, storage rooms and service rooms; automatic fire doors, and carefully protected elevator shafts to prevent entrance and spread of flames. This building is practically divided into four buildings by fire walls, each unit having its own means of egress, such as smoke-proof tower and well protected elevator system. As a result of the introduction of these features and the reduction of the fire hazard, the insurance rate was reduced to about one-quarter of that which would normally have been placed upon the building. This resulted not only in a definite saving on insurance premiums, but in providing a very definite incentive for the location in this building of business firms whose valuable records are well safeguarded against loss by fire.

In a brief consideration of fire loss the direct loss is easily understood and is usually compensated by insurance. To such an extent has the idea of insurance compensation for fire loss been instilled in the minds of the American public that comparatively little attention is given to the fire hazard by the average person. There is subconscious assurance that if a building is burned, the insurance company pays the loss.

As a matter of fact, however, the indirect loss by fire which is not compensated by insurance probably amounts to over five times the direct loss in this country. It may be interesting to consider briefly what constitutes indirect loss. First, we may consider the loss of documents, valuable papers and correspondence which cannot be replaced and in many cases cannot in any way be compensated. Again, there is the checking of business momentum, for instance, when a factory is burned. Insurance may compensate the building loss and even the payroll loss, but the entire course of the business is checked; production is impossible for many months; active markets which should be taken advantage of are lost, and the entire operation of the business through forced suspension is so curtailed and disrupted that the indirect loss to the manufacturer may easily represent considerably more than the direct fire damage.

Normally it would seem that the masonry building is unburnable, and this is true in so far as the masonry portions may be concerned. As a matter of fact, however, the average large fire loss occurs in a masonry building, the unburnable walls of which really constitute flues and furnace walls; while the wood trim, sash, doors and other inflammable material incorporated as a structural part of the building constitute paths along which flame may travel.

The attitude of insurance companies toward this matter of safety building has undergone a considerable change in the last few years. As the insurance business has become more directly under public control, the sources of income and profit have been eliminated more than in the earlier years of great reserve funds.

Recently an extremely interesting development has taken place in this field. During the war period the insurance companies imposed an excess 10 per cent premium charge to meet increased hazards owing to abnormal conditions in the industrial and business fields. Since the close of the war, however, State Insurance Commissioners have refused to permit the further collection of this excess premium. This means a source of curtailment in the revenue of the underwriting corporations and it has been determined that this can best be made up through a substantial reduction in the country's fire waste. Apparently such action is economically sound, as it is certain that the annual fire loss is in a large measure preventable. In many fields this fact has been tested—the conservation work carried out by the underwriters among the grain elevators of the West and Northwest during the past year provides ample proof of this fact. Here a rigid system of inspection, insistence upon the erection of fire walls, installation of automatic sprinklers, fire alarms and other protective devices have been so effective that fires in grain elevators have been practically eliminated.

The National Board of Fire Underwriters have now determined to carry out an extensive program of educational and exemplary work throughout the country. The present program contemplates dividing the country into five districts—New England and the Coast States constituting one; the Southern States another; the Middle States a third; Northwestern group a fourth, and the Pacific Coast territory a fifth. Each territory will be controlled from a divisional office, the whole to be under the general direction of George W. Booth, chief engineer of the National Board of Fire Underwriters, with headquarters in New York City.

As a very positive means toward the desired end, the adoption of modern building ordinances will be advocated, and where these are already in force their rigid application will be urged.

It is evident that with the excellent work in this field which has been done by the National Fire Protection Association, augmented by this broad activity of the underwriters, there will undoubtedly develop a strong current in favor of reducing fire hazard and insurance premiums. It is therefore evident that the architect must give more serious consideration to this question. Not only as a service to his client is he called upon to provide the most efficient and serviceable type of building which may be maintained at the lowest possible charges, but apparently the strengthening of building codes and ordinances against hazardous conditions may be expected, and in this case designers of buildings will be forced to consider this problem.

There can be no doubt that much of the responsibility for fire waste in this country rests upon the architectural profession. Architects, in so far as the structural integrity of a building may be concerned, bear the direct responsibility of incorporating in their design such features of prevention and protection as may at once discourage conflagrations and destructive fires. The structural fire hazard is divided definitely into two classes,—the exterior and interior hazard. The exterior fire hazard has to do with the danger of communicated fires. To avoid this danger the insurance engineer will carefully consider surrounding buildings, both existing and potential. Where, adjoining, there are to be found small structures of inflammable type, window openings should be protected by the use of shutters or metal window frames with wire glass, and other exterior openings should be likewise protected so that in case of adjoining fire, flames cannot find their way into the building. In other words, the desired result is to obtain exterior walls where obstruction to the passage of flames is prevented at every danger point. In the case of small buildings such as dwellings, a large percentage of fire destruction results from communication of fire to frame exteriors and wood shingle roofs. This hazard is one which at best must be dealt with in a common-sense manner. It is evident that large areas of congested frame construction are potential conflagration points, and houses built in such districts should be protected by the use of unburnable materials. In less congested areas the choice of materials is less limited.

The second structural hazard is found in the interior design of a building. Space at this time does not permit of an exhaustive analysis of interior fire hazard, but it is evident that all vertical shafts in a building should be so protected that flames cannot communicate from one floor to another. This is done by the use of fire doors which are automatic in their operation. Again, it is considered that no open area of over 5,000 square feet should be permitted, as it is possible to provide fire walls to subdivide larger areas than this. Protective features, such as automatic sprinklers and fire extinguishing devices, should be provided at points where there is danger of fire origin or quick spread of flames.

It is evident from the points brought out in foregoing paragraphs that here is a subject worthy of careful study by every architect. Membership in the National Fire Protection Association is open at a nominal charge, and through this and various underwriters' organizations literature containing exhaustive studies of this subject may be obtained.—Architectural Forum.

* * *

## Capitol Extension Buildings

Complete working drawings of the Capitol Extension buildings, which will cost in excess of $3,000,000, have been prepared by the architects, Messrs. Weeks & Day of San Francisco, and await final approval of State officials in Sacramento. Construction, it is believed, will be started very soon.

McCREERY BUILDING, SAN FRANCISCO
Willis Polk & Co., Building Construction

# Precast Stone Used for McCreery Building, San Francisco*

THE McCreery building at Montgomery and Pine streets, San Francisco, completed during the fall of 1918, was erected under conditions which demonstrate the value of precast concrete stone where cost, rapidity of construction and architectural effect are important considerations.

Messrs. Willis Polk & Company were definitely restricted in the amount of money that could be expended. The site is a prominent corner in the downtown section of the city and surrounding buildings are all faced with granite. However, limitations on the appropriation available for the McCreery building prevented the use of that material, while the location and character of occupancy called for a building which in appearance would not suffer by comparison with its neighbors.

To meet these requirements the architect decided to use precast concrete stone, faced on all exposed surfaces with a ½-inch coat of mortar made from crushed granite and crushed marble, mica, sand and white cement. Block used for cornice, columns, capitals and the cartouche over the entrance, as well as other ornamental work, were faced with this selected mixture in a similar manner. All block were cast by the plaster contractor and set in place by stone masons.

The resulting effect is a surface which glistens in the sun like cut natural granite and can be distinguished from it only by the experienced eye.

* Text and illustrations, courtesy of "Concrete in Architecture and Engineering."

ENTRANCE, McCREERY BUILDING, SAN FRANCISCO
Willis Polk & Co., Building Construction

Mr. Ralph Stackpole, a San Francisco sculptor, is responsible for the artistic cartouche over the main entrance. This is illustrated in an accompanying view. It bears on a shield between two figures the motto, "Investments Awaken the Earth's Sleeping Resources." This detail of the building is a noteworthy example of the almost unlimited possibilities of concrete in working out purely architectural effects.

The architect's judgment in selecting specially faced precast concrete stone for this work is fully vindicated as the building was completed in a little more than three months after breaking ground and at a cost within the appropriation. The estimate for precast concrete block facing was less than for pressed brick or terra cotta and only one-third as much as natural granite would have cost.

The McCreery building is occupied by E. H. Rollins & Sons, investment brokers, the West Coast Life Insurance Co., and the Harrigan Weidenmuller Co.

Artistically executed buildings give tenants an important advantage and prestige.

* * *

## Why Lumber Prices are Soaring

THE chief trade deterrent to the lumberman is the prevailing and prospective car shortage. While manufacturers are trying to maintain production, unshipped stocks are accumulating. Although there is a persistent demand, the output can not be shipped because of lack of cars, and this has the effect of forcing up prices. Lumbermen are urging the railroads to furnish relief, not only for their own sake, but so that the consumer may get the product freely.

In the southern hardwood sections, transportation has had some effect upon mill output, but the inability to log because of continued rains has been the principal cause of low production during the greater part of the year.

In the State of Washington, the car shortage is said to have been the worst ever known, and one prominent lumberman stated that his company had been obliged to close its camps and pay off 1,700 men, to remain idle indefinitely.

# Use of Models in the Study of Architecture

By WILLIAM A. BORING, Professor of Design, Columbia University

ARCHITECTURE is a subject which as a matter of convenience must be taught by drawings and models as well as by observation of the erected buildings, but the end and aim of architectural instruction is to teach the students to build good buildings rather than to make beautiful drawings. To this end they must be able to visualize their conceptions in form of three dimensions instead of thinking of them as drawings. Drawing usually teaches the student to think in two dimensions, like plane geometry, but architecture really exists in three dimensions, like solid geometry.

Facility in drawing is necessary as one of the processes of study, but after the process passes a certain point the importance of the drawings grows less, and the actual round form of the building becomes more important. At this stage it appears advisable to introduce the making of models which really represent, in small scale, the building "in the round," and permit a study of the structure from all points of view. The nearest approach to a correct concept of the finished structure is thus given in a practicable form.

If it were not too expensive in time and money, all buildings should be first tried out in full-sized models properly colored, so that they could be studied carefully before the work is executed. It is a common practice to have the cornice erected in model and studied from the street level before the actual cornice is built. Since it is impractical, however, to carry out this plan for the usual problem, the most feasible substitute is a small-scale model which represents the design.

Drawings of a building, after all, might be considered as guesses as to how to represent a thing in drawings which will look well in a finished building, except in cases where a known and tested detail is used, and the best architect is the man who can best guess as to what will be the effect in the round of a drawing in the flat.

The Japanese architects for their simple buildings draw plans and elevations of their buildings on one sheet so arranged that the sides fold up, thus forming a model of the house with the roof folding over the side walls. The details of the exterior are drawn on the outside of the sheet, making an exterior model, and the insides of the rooms are drawn on the inside of the sheet, showing the actual detail of the interior. These drawings fold down flat in a neat package, but when shown to the workman or client are set up to form a good model of the real structure. We, having more complicated buildings, cannot follow this method exactly, but we can with cardboard make models which will serve a similar purpose.

In the olden times, when there were competitions for important buildings, competing architects always submitted models. A very elaborate one is still in existence in St. Peter's at Rome, and in the museums of Italy will be found numerous models on a small scale. These models were usually made laboriously of wood. In religious paintings we often see pictures of models of churches rather than drawings of the churches. The old masters did not make elaborate drawings as we do today, but depended more upon the use of simple outline drawings and modeling for the working out of problems.

The greatest value of a model is to show the scale of the projections of parts and details of buildings which cannot well be shown by drawings. Perspective drawings show well from one point of view, but a model shows accurately from every point of view, giving the exact relation of projections which can be judged more accurately from a model than from any drawing. If a completed model is observed with the eye at the correct level, particularly if viewed through a small hole in a card, the simulation of the completed building in the natural size is convincing and a correct method of criticizing and judging the design. The model is useful especially in Gothic work, which involves the use of many planes at various angles that cannot well be shown in drawings.

If he has a natural facility in drawing, the student is likely to become enamored of that phase of the study of architecture, and is inclined to permit the pleasure of representation to crowd out the real study of the actual appearance of the building represented, and for that reason the School of Architecture is emphasizing the necessity of close observation and comparison of actual buildings and forms. Students are trained to see buildings and to think in terms of buildings rather than in terms of drawings, but this is not carried to a degree which detracts from the true value of drawing in composition.

Models are easily made, they are inexpensive, can be colored without difficulty, and surrounded with all of the accessories, such as trees, walks, grass, etc., they give a fair picture of the building as it will be when completed. The making of a model of an ordinary building occupies about one-third of the time necessary to make the design. The plan is accurately drawn to scale on cardboard, and cut on the outside line, the elevations are drawn with details indicated and erected on the plan, and over this the roof is fitted. The student thus goes through the same general motions pursued by the builder in constructing a house, that is, first the foundation is built, then the walls, then the roof. If some part does not satisfy the critic, it is easily changed in the model until a perfect result is attained with precision, provided the designer is capable of producing a good building. There are two kinds of models which the student should learn. One is the scale model of the building which will show in its entirety a large structure in a model not too large for a table top; and the other is the accurate modeling of the details of ornament which are to form parts of the building.

The wonderfully facile drawing of architecture taught by the French school of today does not give a correct idea of the building when built, because it is not studied from the point of view of the constructed building, but from the point of view of a picture. It is noticeable that men from the Ecole des Beaux Arts usually go through a moulting season when they return to America, dropping much of their facile indication and substituting careful study of real form and simplicity.

* * *

## Demand for Draftsmen Continues

The demand for draftsmen is still greater than the supply. Pacific Coast architects are paying top notch wages, yet despite this fact good men are scarce. As might be expected the demand has attracted some incompetent men into the field but their incompetency is not long concealed. One San Francisco architect is known to have discharged three men in as many weeks, who claimed to be all-round draftsmen and who valued their services at $8 and $10 a day. They proved little better than office boys.

# The Self-Sinking Concrete Pile

THE wooden pile is objected to in up-to-date engineering for a number of very good reasons. It used to be cheap, but now it is an expensive constructional unit. It is all the more costly today because of the number broken and split in the driving. Finally, nature has definitely settled the timber pile's durability where it is called upon to furnish support partly in water and partly exposed to the air. That section of the stick which is alternately wetted and dried, day after day, is the point where oxidation promotes rotting, and the rest of the story is a familiar one. We all know that wooden piles are driven in a compact or crowded fashion frequently in order that enough strength can be secured to sustain a prescribed load—numbers being needed for this purpose owing to the character of the material thus employed.

It was due to these drawbacks that the concrete pile came into being a few years back. Since then, however, the engineer and the inventor have been busy improving these piles and seeking to modify both their get-up and the methods by which they could be planted in place. The hammering of a concrete pile into position was soon found to be objectionable. The driver was pretty nearly certain to damage the top of the pile if care were not taken, and, next, if the pile got out of the vertical during the hammering, the angularity of the blows set up stresses that often led to either a break or a serious amount of spalling—the latter at times freely exposing the metal reinforcement.

The latest development in the art is a self-sinking or self-planting pile which is decidedly unique in design and in its manner of functioning while effecting penetration. To begin with, the piling is a concrete column, built as a beam, with steel reinforcing, having in its center an opening which permits of the application of a water jet, and by which the primary excavational work incidental to penetration is accomplished. In addition, there are lateral side jets which promote the sinking of the piling for forming around it externally a water film—thus overcoming the frictional resistance of the earth, mud, or sand which would otherwise tend to exert a grip and to arrest downward movement. The water-jet system consists of two longitudinal conduits—one placed axially inside of the other—the larger being of 4-inch pipe and the smaller of half that diameter. The 2-inch pipe leads directly to the point of the pile, and through the nozzle there a stream of water is driven out under a pressure of 200 pounds to the square inch. The 4-inch pipe supplies water at the same pressure, if need be, to the small lateral jets which have their discharge tips turned upward so as to direct the water vertically.

The upper terminals of the two pipes have separate flexible hose connections with the pumping plant so that the boring jet and the lubricating and scavenging jets can be operated independently. By this arrangement it is practicable to deliver to each conduit the volume and the pressure of water best suited to the conditions encountered. Further, this division obviates the difficulties which would be apt to arise if it were needful to subtract volume or pressure from the point jet to meet the demands of the side jet, and vice versa. The side jets, as will be readily grasped, not only maintain a lubricating film of water around the pile, but they serve to carry surfaceward the material which is displaced by the pile during its sinking, thus supplementing the action of the excavating jet at the point below.

Inasmuch as the piling sinks by reason of its own weight, it readily assumes the desired measure of penetration without being struck a single

blow, and, accordingly, is not subjected to any damaging stresses in getting it into place. Depending upon the skill of the crew, one of these concrete columns can be planted in the course of five minutes from the time it is set in position and started downward. Immediately after the jets are turned off, the earthly material through which the pile has been sunk will settle around the column, grip it, and hold it as firmly as if it had been driven in the usual way. The nozzle at the bottom of the new pile closes the lower end of the 4-inch pipe, and, also, furnishes a wedge-shaped footing for the 2-inch conduits. The latter pipe, together with the hose connections at the top of the piling, is arranged to facilitate rapid attachment and detachment —this pipe and the connections being used repeatedly in sinking other concrete columns. The 4-inch pipe, which remains embedded in the piling, thus becomes a permanent reinforcing member, and augments the rest of the steel work built into the column.

It will be apparent that the pile, during sinking operations, can be readily withdrawn if needful. This is an admirable feature, because the weight of the entire concrete shaft can be made to serve as a giant cold-chisel by letting it drop again on any buried object which stands in the way of its progress. Where such obstructions are to be expected the point of the pile is protected by an enveloping driving shoe of steel. This suffices to break the way clear without inviting injury to the concrete column. Where it is desirable to sink the piles well below the tidal level, pipe connections of sufficient length are brought into play at the tops of the piles so that the planting of the concrete columns can be controlled down to any desired depth below the surface of the water. Subsequently, in breaking these connections, the 2-inch pipe within the pile is withdrawn simultaneously. Concrete piles of this character, 50 feet long and 16 inches square in cross-section, have been sunk in 48 feet of sand and clay and satisfactorily subjected to test loads up to 100,000 pounds per pile.

Up to the present time, the principal use of this type of premolded reinforced concrete pile has been in connection with obstructions planted in the beds of the Missouri and the Platte rivers. There, in addition to the gravel, sand, and silt ordinarily penetrated, both clay and "gumbo" have been encountered and negotiated successfully. Experimental sinkings in alluvium and underlying materials on higher ground have likewise proved entirely satisfactory. Apropos of the facility with which the piles can be planted with their heads well below the bed of a river, Professor O. V. P. Stout, Dean of the College of Engineering of the University of Nebraska, says: "Advantage has been taken of this fact to inaugurate a new system of bank protection where railway grades, farm lands, or other property is endangered by the destructive action of river currents. The method has established a claim to consideration on the grounds of cheapness and expedition; and it is believed that time will demonstrate that it has the added merit of permanence."—Scientific American.

* * *

## A New Use for Redwood

The amount of sawdust used in packing grapes and similar fruits reaches a big total in the course of a season. Just before Christmas 25 carloads of grapes were packed in sawdust in drums and shipped by a large fruit company at Fresno for eastern points. To ship the grapes for the holidays it was necessary to place the packages of grapes in cold storage at Fresno until the time for shipping. The sawdust in this particular case was of California redwood.

# New York's Latest Wage Schedule for Building Trades

STRIKES are made improbable during the year 1920 by an agreement between employees and the members of the Building Trades Employers' Association of New York City. It is set forth in the contract that the purpose of the measure is "to obtain continuity of employment and uninterrupted production." The agreement calls for a working week of forty-four hours and payment of wages from January 1, 1920, to December 31, 1920, as follows:

| | Per Day of 8 Hrs. |
|---|---|
| Asbestos workers and insulators | $8.00 |
| Art glass workers | 7.00 |
| Carpenters | 8.00 |
| Cement masons | 8.00 |
| Cement and concrete workers | ..... |
| Composition roofers and waterproofers | $7.00 and $7.50 |
| Dock builders | 7.50 |
| Electrical workers | 8.00 |
| Electrical workers' helpers | 4.50 |
| Elevator constructors | 8.00 |
| Elevator constructors' helpers | 6.00 |
| Granite cutters | ..... |
| Hoisting engineers (weekly, $46.50); broken time | 9.00 |
| Hoisting engineers on combination mch. | 16.00 |
| House shorers and sheath pilers | 7.50 |
| Housesmiths and bridgemen | 8.00 |
| Housesmiths' finishers | 8.00 |
| Housesmiths' helpers | 6.00 |
| Marble carvers (April 1, 1920) | 9.00 |
| Marble cutters and setters (April 1, 1920) | 8.00 |
| Marble polishers, bed rubbers and sawyers (April 1, 1920) | 7.50 |
| Marble cutters' helpers | 6.00 |
| Mosaic and terrazzo workers | 7.00 |
| Mosaic and terrazzo workers' helpers | ..... |
| Painters and decorators | 8.00 |
| Paperhangers | ..... |
| Plasterers | 8.50 |
| Plasterers' helpers | 6.00 |
| Plumbers and gas fitters | 8.00 |
| Roofers and sheet metal workers | 8.00 |
| Sign painters, letterers and stripers | ..... |
| Steam and hot water fitters | 8.00 |
| Steam and hot water fitters' helpers | 6.00 |
| Tile layers | 8.00 |
| Tile layers' helpers | 6.00 |
| Upholsterers | 9.25 |

* * *

# Not a Question of Price But of Delivery

That the Pacific Coast is about to have a genuine building boom is indicated by the unprecedented rush of work in architects' offices. Not since the year following the great fire have San Francisco architects, as a whole, been so busy. Most of the prospective work is of a substantial nature, such as office buildings, theatres, warehouses and apartments. Residence work, too, shows no sign of a let-up. It seems to be no longer a question of prices, but of delivery. A scarcity of building materials already has developed and with the demand greater than the supply it is not surprising that some of the dealers are unable to guarantee immediate delivery.

# Aggregate Shortage in 1920

## Nearly One Hundred Per Cent Increase in Production of Aggregates Needed to Carry Out Construction Program

A SURVEY of the probable requirements in 1920 for sand, gravel and crushed stone has emphasized the great need for co-operation among the producers, the carriers, the engineers and the contractors in order that the supply of these very essential materials may be at all adequate to meet the demand that will come this year in the highway, the building and the other divisions of construction. A very interesting statement on this subject has been issued by the National Association of Sand and Gravel Producers, from which the following account is abstracted.

During the year 1916, according to the report of the Geological Survey, there were produced in the United States mineral aggregates approximately as follows: Sand and gravel, 90 million tons; crushed stone and chatts, 50 million tons; total, 140 million tons.

This was the largest production of these materials that has been reported, either previously or subsequently.

In the same year the sum of $136,000,000 was spent for surfacing roads, exclusive of municipal paving, for which work it is estimated that 40 million tons of aggregates were used, leaving 100 million tons for all other purposes.

According to figures contained in a letter recently sent out by Mr. Thomas H. McDonald, director of the Bureau of Public Roads, addressed to the State Highway Departments, there is actually available for expenditure on highway construction in 1920, $633,000,000, which, at an average cost of $20,000 a mile, will build 31,650 miles of roads, requiring 125 million tons of aggregates.

### Prospective Construction Work

This road building program for 1920 does not take into consideration street paving nor the maintenance of existing highways; neither does it comprehend the aggregates that will be demanded for the erection of buildings, railroad improvments (including ballast) nor the many other purposes for which sand, gravel, crushed stone and slag are employed.

Because of the curtailment of general construction and maintenance work during the last three years, it can be estimated that there will be a demand for at least a 50 per cent greater supply of aggregates for such purposes in 1920 than for 1916, that is, a total of about 150 million tons.

On the basis of the foregoing figures, therefore, a total of 275 million tons of sand, gravel, crushed stone and slag must be produced this year if the prospective construction program for the year is carried out, or an output of almost 100 per cent over that for any previous year.

### Transportation the Controlling Factor

Mr. McDonald sets forth in his letter that the principal factors on which the accomplishment of the highway program for 1920 depends are as follows: (1) Supply of materials; (2) Shipping facilities; (3) Labor supply; (4) Contractors' organizations.

These four elements of uncertainty apply to other types of construction work, as well as to highway building, while it is obvious that the controlling factor is transportation. It would be useless to increase the capacities of the plants producing mineral aggregates unless at the same time adequate transportation facilities were made available for the movement of such materials.

It is apparent that there must be the greatest degree of co-operation between all parties concerned, including producers, contractors, highway departments, private and public consumers and the railroad authorities, if the delivery of materials required to carry on this huge construction program is made possible. In the first place, existing transportation facilities must be employed in the most efficient manner. To this end it is well to consider how each interested agency may help to meet the situation.

### What Highway Officials May Do

The more important ways in which highway officials can assist in securing a maximum use of existing facilities are these:

(1) Award contracts in the winter months, so that delivery of materials may begin early in the spring when usually open top cars are plentiful.
(2) Where laws will permit, allow estimates on delivered materials, whether in storage at unloading station or on the site of the job.
(3) Award highway contracts in long stretches, so that contractors will be justified in providing equipment for handling materials expeditiously.

### What Contractors May Do

Contractors and other consumers can help materially by adopting these practices:

(1) Arrange for early and regular delivery of materials.
(2) Provide for storage at points of delivery and on site of job whenever practicable.
(3) Unload cars promptly, using special equipment for such purpose when conditions warrant.

The producers of mineral aggregates are entitled to the same rights and privileges with respect to transportation as the shipper of any other commodity, though heretofore, they have been the first to feel the pinch whenever an emergency arose. This is not as it should be and the National Association of Sand and Gravel Producers, through its transportation committee, is exerting every effort to bring about a correction of the injustices with respect to transportation privileges that have been accorded the industry during the past few years.—Bulletin of Associated General Contractors of America.

* * *

## Some References to Publications on Marine Borers

Information on the methods used in combating marine borers, which attack wooden structures in sea water, may be gained from the following publications:

Preservation of Piling Against Marine Wood Borers.—U. S. Forest Service Circular No. 128. 1908.

Efficiency of Various Parts of Coal Tar Creosote Against Marine Borers.—C. H. Teesdale, in Engineering Record, Sept. 12, 1914.

Preservation of Structural Timber.—H. F. Weiss, McGraw-Hill Book Co. 1916.

The Comparative Toxicity of Coal Tar Creosote and Creosote Distillates and of Individual Constituents for the Marine Wood Borer, Xylotrya.—L. F. Shackell, in Proceedings of American Wood Preservers' Association, 1915, pages 233-247.

Destruction of Timber by Marine Borers.—E. S. Christian and others, published in Proceedings of American Wood Preservers' Association, 1915, pages 296-316.

Marine Borers From the Wood Preservers' Standpoint.—L. F. Shackell, Proceedings of American Wood Preservers' Association, 1916, pages 124-131.

Field Tests Made on Oil Treatment of Wood Against Marine Borers.—C. H. Teesdale and L. F. Shackell, Engineering News-Record, Nov. 1, 1917, and Railway Age Gazette, Nov. 2, 1917.

Surface Tensions of Wood Preserving Oils as Factors in Protection Against Marine Borers.—Proceedings of American Wood Preservers' Association, 1919, pages 113-123.

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## *ARCHITECTURAL SERVICES IN SACRAMENTO*

Every day finds those who advocate that the profession of architecture be established more firmly on a business basis closer to a realization of their hopes. The profession is well on the road to eliminating the professional altogether and becoming a business as businesslike as any other. There still remain traces of a residue of artistic ideals, which can probably be eliminated in time by a little economic pressure carefully applied under the direction of public ignorance and indifference.

The Board of Education of the City of Sacramento, whose voters have approved an expenditure of $3,000,000 for new schools, has recently opened bids on the architectural work involved. Response has been received from architects, designers, contractors and builders, stating the terms upon which they will be willing to undertake the design and the superintendence of construction of the proposed buildings. The proposals received range all the way from flat sums and monthly salaries to elaborate schedules of percentages varying with the number and kind of buildings undertaken. The news item naively announces that it is estimated that one proposal would amount to a sum varying from three to ten per cent. There is also a question as to the relative merits of designing entirely new buildings, or re-using plans which the Board had previously acquired for recent schools. These bids, we learn from the same source, have been referred to the Finance Committee for tabulation. It is easy to imagine the zest which the Finance Committee can put into the preparation of charts and diagrams for the guidance of the Board in its decision upon architectural services. We hesitate to attempt to reach over the committee's head, but we could inform the Board in advance that it can save money by duplicating the buildings of which it already possesses the plans, entrusting the design of unavoidable changes or additions to the contractors. The buildings might even be put up unintelligently enough to require no changes at all.

We have the best desire in the world to be charitable, and the most disinterested concern for the success of every architectural undertaking; yet, as an example and a warning, it might really be best if the city of Sacramento were to achieve just the results its conduct of the affair so richly merits. I. F. M.

### *SAN FRANCISCO'S INDUSTRIAL VICTORY*

Through the efforts of the Industrial Department of the San Francisco Chamber of Commerce the so-called San Francisco-Oakland Metropolitan District has been extended to nearly six times its former size and it is now one of the greatest metropolitan areas in the United States.

Mr. Sam L. Rogers, Director of the Census, has informed the Chamber of Commerce that its request for an enlargement for the metropolitan area has been granted and that the outer boundaries of the district have been officially established as desired by San Francisco interests.

This gives San Francisco a population of about 1,250,000 within the new metropolitan area, which includes many manufacturing towns and a vast agricultural territory.

The new district has been so adopted by the census authorities as to take in the cities and towns within the territory bounded by an irregular line drawn inland from a point on the westerly shore of Marin county just north of Tomales bay to roughly include the towns and cities of Tomales, Sonoma, Napa, Fairfield, Suisun City, Antioch, Walnut Creek, Livermore, San Jose, Los Gatos and Pescadero, and to terminate at the point where the boundary line between San Mateo and Santa Cruz counties melts into the line of the Ocean Shore.

The enlargement of the old district comes as a result of the rapid growth of San Francisco, past, present and future, as laid before the Director of the Census in a report compiled and forwarded to the Washington office by the local commercial organizations last June.

In laying the claim for a larger area before the census bureau particular emphasis was placed upon the fact that the former district was not truly representative of the manufacturing conducted in the vicinity of San Francisco, for the reason that the city is situated upon the largest and finest natural landlocked harbor in the world, and that the largest and most representative manufacturing establishments sought locations along the shores of the bay and, in many instances, outside the previously established San Francisco-Oakland Metropolitan District. Nearly one hundred cases were cited where manufacturing institutions maintained factories in the bay district with head offices in San Francisco.

An estimate of the present population of the cities and towns within the new district showed a population of one and one-quarter million people residing within the urban districts of this area.

Evidence was submitted that showed the population of the eleven Western states had more than doubled itself in the last sixteen years, and that San Francisco was in the center of this wonderful growth.

It was requested that the district be sufficiently enlarged to furnish an accurate accounting of the district's growth over the next four manufacturing censuses without a disruption of the boundary lines.

It was upon this showing that the new district was officially adopted.

There are about fifteen cities of the United States which have heretofore been credited with Metropolitan Districts. In area the San Francisco-Oakland District will probably be one of the largest.

It is the natural conditions surrounding this city which make this possible.

Some idea of the showing to be made by the figures which will be announced when the census of manufacturers is completed, may be gained from the following statements compiled by the Research Department of the Chamber of Commerce:

In 1899 there were in the San Francisco-Oakland Metropolitan District 2,016 manufacturing establishments employing 37,390 wage-earners, with an annual value of production of $119,240,348. Figures for the same phases of manufacturing 15 years later show for the same district 3,249 establish-

ments engaging 47,626 wage-earners, with the annual value of production $248,077,474. It will be seen that the number of establishments has increased about one-third, the number of wage-earners has increased in like proportions, and there has been over 100 per cent increase in the annual value of production.

In 1899 the population of the San Francisco-Oakland Metropolitan District was estimated at 450,549. In 1909 the population of the same district was placed by the United States Census Bureau at 686,873. In 1914 the population was placed at 777,984. Thus it will be seen that the percentage of increase in the five-year period from 1909 to 1914 nearly equalled the percentage of increase in the ten-year period between 1899 and 1909.

It is conservatively estimated that figures for the San Francisco-Oakland Metropolitan District for the year 1919 will show that San Francisco has, within its district, over 4,000 manufacturing establishments employing over 65,000 wage-earners, with an annual value of production in the neighborhood of $350,000,000.

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### *ENGINEERS AND ARCHITECTS URGE IMPROVED CONTRACT FORMS*

Contract forms generally accepted as standard are greatly needed at the present time in order to stabilize practice in letting and carrying on construction work. Not only must these forms be absolutely fair in fact, but they must be recognized as such, and brought into general use if their full value is to be gained.

For these reasons, engineers and architects as well as contractors are expressing much interest in the work being done by the Committee of Contracts of the Associated General Contractors of America, which intends later to present definite recommendations to the association concerning contract forms.

The results of this study would then be placed before the technical societies for suggestions and approval. Comments of much value have already been received from many engineers and architects. The following conclusion is quoted by Contract Record from a letter received from J. Edwin Hopkins, of the McCormick Company, Inc., architects and engineers, and printed in the news-letter of the Associated General Contractors:

> I am inclined to believe that if your association can arrive at a conscientiously prepared contract form, absolutely fair and protecting the interests of the owner, the contractor, and the architects or engineers who act as agents for the owner, much misunderstanding and friction would be eliminated and those of inexperience or ulterior motives controlled thereby. You will agree with me that there are a number of incompetent men practicing the profession and operating in the sphere of the contracting world, respectively, who are suffering from a lack of experience, shoddy methods, and willful malpractice, and that equitable contract forms, generally recognized, would very effectively remove much of the opportunity now offered these men for harm.

In explaining the interest of his firm in the matter of contracts, Mr. Hopkins states that they are confronted with many types of building contracts that are found to be lax, incomplete, or extremely partial as they refer to the owner, the contractor and the architect. Often these contracts are advanced by local contractors who apparently are not familiar with, or are unwilling to accept documents in more general use. Mr. Hopkins' letter continued as follows:

> This organization has been accustomed to using the uniform contract as originally adopted by the National Association of Builders and the American Institute of Architects, but since the status of this contract has been superseded in many states and cases by the documents of the American Institute of Architects, we have attempted to use these documents, and even in this case there is some confusion on the part of the contractors in the smaller cities in various states, due to their unfamiliarity with the A. I. A. forms.
>
> I have read with interest the article on "Scrap Book Contracts," which, of

course, do not work to the best interest of those governed by such documents, and many times cause confusion, friction, and ultimately litigation. This article, in my estimation, applies not alone to young engineers fresh from college, but also to young ambitious contractors who many times present rather difficult and unintelligent proposals and contracts to owners, particularly in the case where the architects or engineers controlling certain operations are unable to guide the closing of contracts, by reason of their great distance from the seat of operation.

Please understand that I also consider the documents of the American Institute of Architects an admirable medium governing the procedure of building operations and have used them in a number of cases, but to be frank with you, I find that when these forms are submitted to contractors in the smaller cities and towns throughout the country, they invariably are skeptical and take exception to these documents, preferring to use their own local forms which in instances such as ours can hardly apply intelligently. For this reason, I am exceedingly interested in the consideration that your Committee of Contracts is giving to this matter, for undoubtedly you can strike a happy medium and possibly in a briefer form, which would eliminate any feeling of doubt or suspicion in the preliminary procedure of a building operation.

I write you at length because of certain unfortunate experiences which have occurred in my activities for this company in the states of Michigan, Georgia, Rhode Island, Kentucky, New York, and Maine, where both the owner and contractor have materially been affected by a lack of mutual understanding as to the proper contract to govern their building operations.

This organization has always adopted the attitude that the owner and contractor stand on the same level and in our handling any work we know absolutely no partiality to either the one or the other, and in cases where we find an attempt on the part of the owner to take advantage of the contractor, we protect the contractor, and vice versa.

You make mention of cost plus contracts which during the present time seem to be finding favor amongst general contractors. We have been compelled to use such contracts, but in doing so, we prefer to include either a participation clause or profit sharing clause, the idea of which is to offer an incentive to all parties concerned to give closer cooperation on the work.

## Architects to Solve House Shortage

In connection with the present housing crisis in the United States, the Board of Directors of the American Institute of Architects have sent the following letter to the President's Industrial Conference:

Washington, D. C., Dec. 17, 1919.

To the President's Industrial Conference, Washington, D. C.

Gentlemen:

The question of living conditions is seriously engaging the peoples of every civilized nation. In the United States, as elsewhere, the problem has been forcing itself upon public attention for many years, and even before the war, the measure of its gravity was steadily increasing. Today, due to the impact of factors strikingly emphasized by the five years of war, this nation finds itself confronted with problems of the greatest perplexity, every phase of which may be said to relate to living conditions.

The house, and the home, must be accepted as the base around which the problem revolves. No solution of our industrial unrest can be possible until the primary requisite of shelter is acknowledged as a crucial factor. In principle, it may perhaps be said, without fear of contradiction, that we are faced with a shortage in dwelling-places of formidable proportions. Likewise it may also be said that no satisfactory plans for meeting this shortage have as yet been advanced.

No figures are at present available to indicate the measure of the need for new dwellings. In New York City alone it has been computed by careful survey that no less than 30,000 new dwelling-places are needed to care for the present shortage. Almost without exception, every great city reflects a like condition.

The causes for this condition are no doubt many and various. They relate to the war, to the cost of building, to wages, rents, land and building speculation, and, incidentally, to the whole fabric of our industrial system. The house and the home are an indissoluble part of the National fabric. They cannot be isolated and studied as detached symptoms. They must be considered as a part of the whole problem, and we believe that the Government of the United States should at once take steps toward the making of a complete and impartial investigation into the problem of providing adequate shelter for its increasing population.

A vast field of experience, as developed in other countries, lies ready for cultivation. The advances made by other peoples, as expressed in such recent legislative enactments as the English Housing Act of 1919, the Canadian Act of 1919, the Saskatchewan Act of 1919, the proposed New Zealand Act, together with the exhaustive studies and reports issued by these and other countries, provide a large amount of information which is vital to any clear conception of the magnitude of the problem. By combining the experience of other nations with that gained in our own country through the work done by the Government itself, as a war measure, we believe that there can be constructed a comprehensive report which will deal with the problem in an adequate and intelligent manner and which will be of infinite value to the hundreds of perplexed communities that are now seeking information and light.

Such a report, to be of any value, must be made by a group of men and women qualified to deal with the facts in a fearless and straightforward manner, for it is only through an impartial presentation of all the evidence that there may be gained any broad National understanding of the extent of the problem and the principles involved. We do therefore urge upon your consideration the creation of a competent agency for the making of this sorely needed study. Various bills introduced into the last Congress indicate that the need for governmental action has already been felt, but action, to be most useful to the people of the United States, should no longer be delayed.

For this pressing problem of housing we bespeak your earnest consideration, and we shall be glad to present evidence in support of our contentions if you so desire. Very truly yours,

WILLIAM STANLEY PARKER,
*Secretary.*

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# With the Architects

## Building Reports and Personal Mention of Interest to the Profession

### Competitive Bids for Architectural Service

Several years ago the California Legislature wiped off the statutes an obsolete law which required school boards to advertise for competitive plans for buildings and providing that the successful competitor should give a $5,000 bond guaranteeing that the building could be erected according to the plans within a stipulated cost. This law was a relic of pioneer days when there was no distinction between an architect and a contractor. There was practically no opposition to its repeal because the people generally recognized that it did not conform to modern methods and practice.

But behold the shade of this old law reappearing in the very town where the Legislature met to chant its requiem. The Board of Education of Sacramento is advertising for competitive bids from architects for the preparation of plans for $2,000,000 worth of school buildings to be erected under a bond issue. Each architect submitting a bid must file with it a certified check for $5,000 as a guaranty that he will comply with the bid if required to do so by the board.

The preparation of plans for a school building or any other important structure is essentially a service that calls for skill, knowledge and certain professional experience. We assume that the city wants the best or, at least, competent architectural service. How it expects to obtain it on the basis of competitive bids is beyond our comprehension. What is to be the measure of competency—the smallness of the fee asked for service or the ability to put up a certified check for $5,000?

If the Sacramento Board of Education wanted a new superintendent for the city schools would it ask for competitive bids? No, indeed; the members of the board who are now asking competitive bids for architectural service would probably ridicule the suggestion. They would either seek the person they considered best fitted for the position and offer him a salary large enough to make it attractive, or they would fix a maximum salary which they thought the city could afford to pay and seek the best man they could get who would accept the salary.

If the Board of Education of Sacramento decided to establish its own architectural department to make the plans for $2,000,000 worth of school buildings it would not think of advertising for competitive bids for the position of supervising architect, or even a chief draftsman. Its first and sole idea would be to get a competent man to take charge of the work and it would spurn a man who would offer his services at a price below that which they believed the responsibilities of the position justified and demanded.—Southwest Builder and Contractor.

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### The Building Outlook in Oregon

Although building conditions in Portland were better during 1919 than had been experienced for several years, present indications point to even a larger volume of construction work to be carried on during 1920. Practically every city in the entire state is planning new and modern buildings, and in each instance permanent structures are being contemplated.

With the exception of Portland, Astoria will undertake more new buildings than any city in the state during 1920, according to a Portland trade journal. Several apartment houses are assured for Astoria; a large hotel annex to the Weinhard Hotel is expected to be built this year, as well as several other business blocks. Two members of the City Council at Astoria purchased a site and announced that they will erect a fireproof business building to cost $100,000; the candy company at that place is to build a new factory to cost $40,000.

The largest building announced for 1920 to be built in Portland is the Montgomery Ward building, the first unit of which will cost a million and a half. Work is now being carried forward. Two other large buildings already announced are the half million dollar warehouse for the Meier & Frank Company, and the five-story warehouse for the Ballou & Wright Company.

This is the first year since the start of the world war that the city has planned any new buildings, and there is

over $100,000 available for new fire stations. A hospital is also planned to cost about $35,000. The county hospital will cost $400,000, which will be contracted for soon. Several large building projects in the preliminary stages but which are expected to be undertaken this year include a large Elks building to cost probably $500,000 or more. The Masonic lodges are also planning a large temple, which no doubt will be undertaken before long.

Other cities planning substantial business buildings include Salem, where building projects are planned; Pendleton, Union, Bend, Eugene, Marshfield, North Bend and Enterprise. In practically every community in the state garage buildings are planned, and in most instances brick or concrete structures of a permanent type are planned.

Added to the building conditions will be the large sums spent on highway construction, of which the state alone will carry on $20,000,000 in projects.

### Washington Chapter's Annual Meeting

Washington State Chapter, American Institute of Architects, held its twenty-fifth annual convention January 10th at the Washington hotel, Seattle. It was declared to be the largest and most interesting meeting of architects ever held in the State of Washington.

A meeting of all visiting delegates was called for 10 o'clock a. m. at the Washington hotel, which was presided over by Mr. G. C. Field, chairman of the chapter group committee which has in charge the welfare of all members residing outside Seattle. Delegates were present from Tacoma, Spokane, Bellingham, Everett Yakima, Pullman and other cities.

The convention was opened by President Daniel R. Huntington, following a luncheon at which over 75 were present. Mr. James E. Blackwell welcomed the visiting members. The reports of Secretary Louis Baeder and Treasurer Frank L. Baker were listened to with much interest. The following important committee reports were made: Civic Design Committee, Mr. Carl F. Gould, chairman. He reviewed its work for the year as did the Chapter Group Committee, Mr. G. C. Field, chairman. Legislative Committee, Mr. Louis Baeder, chairman; Ordinance Committee, Mr. James H. Schack; Draftsmen's Committee, Mr. A. L. Loveless; Publicity Committee, Mr. G. C. Field; Ways and Means Committee, Mr. Frank L. Baker.

The report of Mr. Arthur L. Loveless for the Education Committee signed by his "office boy," outdid, it seemed, the clever report made by the same "office boy" last year.

The business session was adjourned following an address by Mr. C. H. Whitaker, and the members with their wives later attended a banquet.

The following officers were elected: President, Mr. Charles H. Alden, Seattle; vice-presidents, Messrs. James H. Schack, Seattle; George Gove, Tacoma, and L. L. Rand, Spokane. Secretary, Mr. F. A. Naramore, Seattle; treasurer, Mr. Earl G. Park, Seattle; director, Mr. A. H. Albertson, Seattle.

### California Housing Movement

Throughout the state of California there is a well-defined building movement, the purpose of which is to provide housing accommodations for the people of the cities and towns. While the subject of solving the lack of building accommodations has been discussed by many organizations, municipal boards and commissions, it is noticeable that in a majority of cases the final decision has been in favor of the organizing of corporations to handle the task.

An example of how this plan works is given by the Napa Home Builders' Credit Association, organized in the city of Napa with a capital stock of $20,000, divided into 200 shares of the par value of $100 per share. The company was organized for the purpose of assisting in the building of homes in the city of Napa and the corporation is being fostered by public subscriptions. The plan of operation of this particular corporation is to advance to the prospective home builder as much money as the home builder has on hand and the balance thereof needed for the erection of the home shall be secured by a first mortgage of the property. In other words, the purpose is to bridge the gap between the amount of money a bank will loan on the property and the amount which the home builder may have on hand, but not exceeding, however, the amount which the home builder has available for such purpose.

The Napa Association made application to Commissioner of Corporations E. C. Bellows to sell its entire authorized capital stock—$20,000, divided into 200 shares of the par value of $100 per share. After reviewing the case and devoting a hearing to a committee of men from the city of Napa on the application, the Commissioner issued the permit as applied for.

### To Pick Notable Examples of Architecture

What are the most notable examples of architecture, landscape architecture, sculpture and small house architecture within twenty miles of the Los Angeles city hall? That is a question which a jury consisting of three architects from other cities and two laymen versed in matters of art, appointed by Southern California Chapter of the American Institute of Architects, will decide. Notices have been sent out by the contest committee,

consisting of Mr. A. F. Rosenheim, chairman; Mr. D. C. Allison and Mr. Alfred W. Rea, asking for nominations for the contest. Architects are asked to list not only examples of their own work but also the work of others which they think should be considered. The report of the jury is to be made by March 1, or as soon thereafter as possible.

The jury which will make the selections will consist of Messrs. Chas. H. Cheney, city planning consultant, of San Francisco; Winsor Soule of Santa Barbara, John T. Vawter of San Diego, the latter two prominent architects in the South; John W. Mitchell, attorney and art student of Los Angeles, and Dr. Comstock, curator of Southwest Museum, Los Angeles.

The report of the jury will be published in full in the April number of The Architect and Engineer.

Coincident with the work of the jury the public will be invited to designate what it considers the best examples of architecture, landscape architecture and sculpture. For this purpose a prize competition for laymen has been arranged, announcement of which will be made by posters. The purpose of this competition is to stimulate interest among the people in good architecture and the desirability of employing competent professional advice.

## Personal

Mr. R. A. Herold, architect, of Sacramento, visited some of his San Francisco friends the past month. The new Masonic Temple at Sacramento is about finished and is a credit to its designer, Mr. Herold. Photographs and plans of the building will be shown in an early number of the Architect and Engineer.

Mr. C. E. Richardson, formerly of McKim, Mead & White, and later with Bliss & Faville, of San Francisco, has accepted a position with Messrs. Temple & Burrows, architects, of Davenport, Iowa. Mr. Richardson has been retained to design some large buildings.

Messrs. William J. Todd and Harry T. Miller have formed a partnership as architects and engineers, with offices in the Masonic building, Phoenix, Arizona. They would be pleased to receive trade literature and manufacturers' catalogues, samples, etc.

Mr. Erle J. Osborne, 2026 Jackson street, San Francisco, has opened offices at 821 Balboa building, San Francisco, for the practice of architecture.

Mr. James H. Hoose, formerly of Bakersfield, is now practicing architecture in Modesto. His address is 818 Thirteenth street.

Mr. A. Willoner, 403 Twenty-first street, Sacramento, is visiting in New York City.

## Architects Win Suit for Fee

Messrs. H. Alfred Anderson of Long Beach and Richard C. Farrell of Los Angeles, formerly associated in the practice of architecture at Long Beach, secured a judgment in the Superior Court against Mrs. Madeline Kniss and Mrs. Charlotte Vargo, sisters, for $1,266.44, as their fee for preparation of plans for an apartment house. The defendants contemplated building a three-story apartment house on a lot owned by them on E. Fifth street, Long Beach. The architects were retained to prepare plans and supervise the construction of the building, 3 per cent to be paid for plans and 2 per cent for supervision. Bids were taken for the erection of the building and the project was abandoned by the defendants. When the architects demanded payment for services rendered it was refused and they brought suit. A fee for supervision was waived, but judgment was rendered for preparation of plans, based on 3 per cent of the lowest bid received, which was about $42,000.

## Oakland School Plans

The Oakland Board of Education and Citizens' Advisory Committee have finally determined upon a plan for carrying out the new school program under the authorized bond issue of $4,750,000. Mr. C. W. Dickey, as stated in this magazine last month, has been appointed supervising architect, while Mr. Marston Campbell has been named chief of construction. Offices will be maintained in the building at 12th and Webster streets, Oakland, which is also the new home of the General Contractors' Association of that city. Mr. Dickey will endeavor to standardize the specification work as far as possible for all the buildings, while the departments of heating and ventilating, electrical work and plumbing, will be in charge of specialists. Architects will be named to design the different buildings, and their compensation will be 3½ per cent. Bids will be taken on a segregated basis for all construction work amounting to more than $70,000.

## Competition for Shrine Temple

Al Malaikah Temple, of Los Angeles, has decided to hold a competition in accordance with the rules of the American Institute of Architects for the selection of an architect to design the new Shrine auditorium to be erected at Jefferson and Royal streets in Los Angeles, to replace the building recently destroyed by fire.

The competition will be conducted in two stages. The first stage will be open to all architects. From the drawings submitted a number will be selected to be further developed by their authors and from these the plans for the new temple will be chosen. Suitable prizes

will be offered to the architects selected to compete in the second stage.

Mr. John C. Austin has been appointed professional advisor for the competition and is preparing the details of the program.

### Permitted to Practice Architecture

Following a written examination held December 15 to 18, 1919, the following candidates were granted certificates to practice architecture by the Northern District, California State Board of Architecture:

William Herbert Gebhardt, 110 Sutter street, San Francisco.

John Upton Clowdsley, 346 West Acacia street, Stockton.

George O'Brien, 1117 Fifty-third street, Oakland.

Mr. Charles F. Masten, 68 Post street, San Francisco, was also granted a certificate to practice.

The following were granted certificates in Southern California:

Mr. E. Keith Lockard, 338 San Marcus building, Santa Barbara; Mr. Harold S. Johnson, 40 St. James Park, and Mr. William M. Clarke, 1738 N. Alexandria avenue, Los Angeles.

### American Association of Engineers

Mr. E. Earl Glass of the engineering department of the Los Angeles County Flood Control District, has been elected chairman of the Los Angeles County Section of members of the American Association of Engineers. Mr. C. E. Weary of the County Surveyor's office is secretary. The county section of the A. A. E. has as charter members most of the qualified technical employes of the county road and flood control departments. Regular meetings of the section will be held each Monday.

The title of the official bulletin issued each month from the national headquarters of the American Association of Engineers at Chicago has been changed from "The Monad" to "The Professional Engineer."

### Architect Hays Busy

Besides his work as supervising architect of the new school buildings at Berkeley, Mr. W. C. Hays reports that his office force in the First National Bank building, San Francisco, is busy on plans for a two-story reinforced concrete creamery to be erected at the State Farm, Davis, for the University of California. This building will cost $100,000. Sketches are also being made in the same office for a two-story reinforced concrete private hospital at Santa Cruz for Dr. Phillips. The improvements will cost $60,000. Mr. Hays and Mr. Charles Sumner have been commissioned to prepare plans for a $100,000 grammar school at Palo Alto.

### Idaho State Board Examination

The regular examination for architects desiring a license to practice in the state of Idaho will be held on March 9. Under the existing law, all professions requiring licenses fall within the jurisdiction of the Department of Law Enforcement; the examinations, granting of reciprocal licenses, etc., being in the hands of a committee of five licensed architects. The administrative features are handled by the department. This system is copied after the Illinois Administrative Code.

All correspondence and inquiries should be directed to the Department of Law Enforcement, of which Mr. Paul Davis is Director.

### Has Much Work

Mr. Smith O'Brien, architect in the Bankers' Investment building, San Francisco, has recently awarded contracts for alterations to the Humboldt Bank building, and for the construction of a brick garage for Mrs. Aphra West, on Fillmore street, near Haight. Contract for the latter has been let to W. C. Duncan & Company, for $15,834. A contract has been let to Barrett & Hilp to build a one-story brick battery service station on Bush street, San Francisco, for the Willard Battery Company. Plans have also been made in Mr. O'Brien's office for a four-story and mezzanine floor class C warehouse for the Rucker-Fuller Desk Company.

### Competition for County Hospital

Architects living in San Mateo county (you can count them on your fingers—W. H. Toepke, T. M. Edwards, J. R. Miller, Ernest Norberg, Geo. H. Howard, Lewis P. Hobart, W. L. Schmolle, Will D. Shea), have been invited to submit competitive plans for a $125,000 county hospital at Beresford.

The program provides that the successful architect shall receive 6 per cent of the total cost of the building, with second, third and fourth prizes at $500, $400, and $300, respectively.

### Architect Meyer Busy

Recent contracts awarded in the office of Mr. Frederick H. Meyer, Bankers' Investment building, San Francisco, include the Healdsburg National Bank for approximately $100,000, a two-story class C garage and a one-story reinforced concrete store building for Mr. Joseph Schoenfeld, the last two buildings totaling in value $35,000. Mr. Meyer is also preparing plans for bank buildings at Chico and Red Bluff, and for a large residence at Broadway and Baker streets for Mr. S. G. Hinds. The house will cost $35,000 or more.

### Fitzhugh Office Building

Working drawings are practically completed for a sixteen-story class "A" store and office building which Mr. William Fitzhugh intends to build on the vacant lot at Powell and Post streets, San Francisco. The main portion of the building will be twelve stories, with a clock tower that will bring the total height to practically sixteen stories. A two-story wing will flank either side of the main structure, and these two wings will provide eight large well-lighted stores. There will be approximately 240 offices.

### Form Partnership

Messrs. Charles F. Masten and William W. Hurd have formed a partnership for the practice of architecture, and have taken offices on the sixth floor of the Foxcroft building, San Francisco. They have recently completed plans for an apartment house to be erected at Woolsey street and College avenue, Berkeley, for Mrs. Mary Hayes Wolfe. They are working on drawings for an $80,000 country house for a prominent Holland capitalist.

### Apartments and Residence

Mr. Wm. E. Milwain, architect in the Albany building, Oakland, has completed plans for a two-story frame apartment house to be erected on Stanton avenue, near Belmont street, Oakland, for Mrs. D. S. Ayers. Mr. Milwain has also made plans for a $20,000 stucco residence of ten rooms and three baths for Mr. J. W. Marshall, a San Francisco attorney. The house will be built on Sotelo avenue, Forest Hill, San Francisco.

### New Partnership

Messrs. Ralph Wyckoff of Salinas and Watsonville and Hugh C. White, formerly with Mr. Lewis P. Hobart, have formed a partnership for the practice of architecture, with offices in Salinas. They have plans completed for the new Salinas High School building, for which bonds were voted and sold some time ago. Plans have also been drawn for a commercial garage to be erected in Palo Alto for Mr. J. McIntosh.

### Bakersfield Architect Resumes Practice

Mr. Charles Howatt Biggar has resumed the practice of architecture in Bakersfield, after serving Uncle Sam for a period of two years as an officer in the Engineers' Corps. Mr. Biggar would like to receive catalogues and other trade literature from manufacturers of building materials. Work on hand in his office includes additions to the Kern County Union High School and a $200,000 soldiers' memorial building.

### Nice Commission for Mr. Orr

Mr. Robert Orr, who has many friends in San Francisco, having at one time been associated with Mr. W. H. Weeks, was a San Francisco visitor the past month, on his way back to Los Angeles from Seattle, where he was commissioned to prepare plans for the new Westminster Presbyterian Church and Bible School. An edifice of brick and terra cotta costing $125,000 or more is planned.

### Berkeley Residence

Mr. James W. Plachek, architect, of Berkeley, has completed plans for a large frame and plaster residence, which will be erected on Virginia street and Bushnell place, for Mr. H. C. McCauley. The house will cost $15,000. The same architect has made plans for a $10,000 residence to be built in Claremont for Mr. S. A. Keystone.

### Sacramento Auto Sales Building

Mr. Jens C. Petersen, Peoples Savings Bank building, Sacramento, has awarded a contract for $100,000 for a three-story auto sales building to be erected at 12th and K streets, Sacramento, for the Moeller Auto Sales Company. Building will be 80x160, and will be equipped with steel sash, lockers, showers, elevator and steam heat.

### $110,000 Store and Office Building

Mr. B. G. McDougall has moved his office from the Sheldon building to the Alta building, 381 Bush street, San Francisco. Mr. McDougall is preparing working drawings for a two-story class C brick store and office building for the McDermitt interests at Battery and Halleck streets, San Francisco, at an estimated cost of $110,000.

### Five-Story Apartment House

Mr. W. H. Crim, Jr., architect at 425 Kearny street, San Francisco, has prepared plans for a five-story steel frame and brick apartment house for Mr. Edw. Rolkin, to be erected at McAllister and Leavenworth streets, San Francisco. Construction will start as soon as contracts are let. There will be 30 apartments.

### New Buildings for Japan

Mr. Daniel L. Norris, who is connected with the George Fuller Company, contractors of New York, recently paid San Francisco a visit on his way to Japan, where he states his company has contracted to build a $3,500,000 hotel at Tokyo and a seven-story office building in the same city for the Japan Oil Company.

### Architect Stewart Busy

Mr. Joseph L. Stewart, architect in the Claus Spreckels building, San Francisco, has completed revised plans for a one-story auto tire sales building and warehouse for the Michelin Tire Company. It will be erected on the company's property on Twelfth street, north of Howard, San Francisco, at a cost of $25,000. Mr. Stewart has also completed plans for a $10,000 residence to be built in St. Francis Wood for Mr. Carl Ingram of the Associated Press.

### Two Residences

Mr. Clarence A. Tantau, 251 Kearny street, San Francisco, has prepared plans for a $25,000 residence to be erected in Seacliff, San Francisco, for Mr. Francis H. Crosby. The same architect is preparing sketches for a $50,000 country house in San Jose. Mr. Tantau has been commissioned to design a memorial fountain for the Plaza at Mission San Juan.

### Architect of Grammar Schools

Mr. H. B. Douglas, King City architect, has completed plans for a grammar school auditorium for the King City Grammar School District. Bids have been received for a frame and concrete building having accommodations for 1,000 pupils. Mr. Douglas is also architect of the Greenfield Grammar School building, under construction.

### Architect May Lose

Mr. Francis W. Reid, Sacramento architect, says he may be a loser as a result of the closing of the First National Bank of Newman. Mr. Reid says he had made plans and specifications for a $20,000 high school and gymnasium, and an $8,000 Carnegie Library, funds for which were deposited in the bank.

### Hospital Unit Being Figured

The Supervisors of Nevada county are calling for bids for the construction of the third unit to the County Hospital at Grass Valley. The new wing will be two stories and constructed of concrete, with tile roof. The estimated cost is $50,000. Mr. William Mooser of San Francisco is the architect.

### Brick Packing Plant

Mr. Phillip Bush, in charge of the engineering department of the California Packing Corporation, 101 California street, San Francisco, has completed plans for a brick packing plant at Santa Rosa. Construction will be steel frame, with brick walls, and the investment will run close to $500,000.

### Oakland Apartment House

Mr. W. J. Wythe, Central Bank building, Oakland, has prepared plans for a three-story frame apartment house, to be built at Second avenue and Boulevard place, Oakland, for Mr. J. R. Woolsey. Mr. Wythe is also preparing drawings for a residence and studio for Mr. Emil Craposhet, in San Jose.

### Portland Apartment House

Messrs. Lawrence & Holford, Chamber of Commerce building, Portland, Oregon, have prepared plans for a six-story brick and concrete apartment house to be built in Portland for the Berkshire Apartment House Company at an estimated cost of $225,000.

### May Erect Office Building

The Matson Navigation Company is again considering the erection of a large office building on its property at Main and Market streets, San Francisco. Messrs. Bliss & Faville have made some preliminary plans for a fifteen-story structure.

### Architect for Napa Schools

Mr. William H. Weeks, 75 Post street, San Francisco, has been selected as the architect for a new high school building and two grammar school buildings at Napa. A bond issue of $500,000 has been authorized.

### Additions to Country Residence

Mr. C. A. Meussdorffer, architect in the Humboldt Bank building, San Francisco, has completed plans for alterations and additions to the country residence of Mr. J. K. Armsby, at Ross, Marin county.

### More Houses at Seacliff

Plans have been completed by Mr. Earl Bertz, Foxcroft building, San Francisco, for eight houses which the Allen Company will build at Seacliff, San Francisco. These houses range in cost from $10,000 to $15,000.

### New Orpheum Theatres

Mr. G. A. Lansburgh is busy on plans for two new Orpheum theatres, one to be built in San Francisco and the other in Los Angeles. Each will cost a million dollars, and will have offices in connection with the theatre.

### Palo Alto House

Mr. John K. Branner, architect, 251 Kearny street, San Francisco, has awarded contracts for a $15,000 home to be built at Stanford University for Mr. K. G. Rendtorff.

### Architects' Licenses Revoked

The State Board of Architecture announces that it has revoked the licenses to practice architecture issued to Messrs. J. Martyn Haenke and Charles Gordon.

# The Contractor

BUILDING CONSTRUCTION, BRIDGES AND ROAD WORK

### A Charge for Estimating Expense

CONTRACTORS, as a general rule, conduct their businesses on a profitable basis, and their customers pay for the expense of preparing estimates, since a profit is made on the aggregate contracts. But this expense is not shared by all customers in proportion to amount of work done for each one, for which reason general opinion favors some plan to equitably apportion this expense.

A number of plans have been presented from time to time, but none of them have been considered thoroughly workable, so that little has been accomplished toward putting into practice a method of securing payment for estimating. Most of these plans have failed to make provision for paying the contractor for submitting estimates on work that does not go ahead. It often occurs that bids are asked just for the purpose of ascertaining what prices will be quoted. Then again, an entire set of estimates may be thrown out because the one calling for the bids may have set too low an amount as the maximum figure for the work to be done. Some plan should be devised whereby the contractor will receive compensation for all estimates prepared, so that the necessity for burdening contracts received with the cost of preparing estimates on work for which no contracts were received will be obviated.

A new plan which has come to our attention has several interesting features. It provides that an owner must stipulate that the work involved in the estimate shall not cost over a stated amount, and of this maximum cost a certain percentage would be set aside for division among the three or four lowest bidders. The size of the contract would determine the number of bidders who would be paid for estimating. Any bidder who could not get close enough to the lowest bid to be counted in would receive no pay, the inference being that his estimate was mostly guesswork.

While the plan is not complete these features seem worthy enough to be incorporated into a plan that would help solve this question of unfair practice.—Electrical Review.

### Plan to Unite Contracting Forces

Interest for some time past has been centered in a movement to unite the building industry of San Francisco under one head, says the National Contractor's Bulletin. At present there are two organizations of contractors and materialmen. The older, the Builders' Exchange, is an association of individuals without regard to craft or subsidiary organization; the other, the Building Industries' Association, which developed out of the Building Trades Employers' Association, is an organization of crafts having as a prerequisite for membership, membership in a craft organization.

Two organizations of general contractors are also in the field. The older one, known as the General Contractors' Association, is affiliated with the Building Industries Association, and the recently organized Master Builders' Association is made up of members of the Builders' Exchange. The consolidation movement has in view the amalgamation of the Builders' Exchange and the Building Industries' Association on the one hand, and of the General Contractors' Association and the Master Builders' Association on the other. It is not a new movement, having received its first strong impetus at the American Builders' Week, held at the Panama-Pacific International Exposition in 1915. After the lapse of four years through many disappointments the outlook is bright for a successful outcome in the near future.

---

### Oakland's Building Record

A summary of Oakland's building statistics for 1919, according to Inspector J. H. Lloyd, shows an increase over 1918 of 1,111 permits, representing a total money outlay of $1,752,412. Total permits for 1919 were 4,059, value $7,134,572; permits for 1918, 2,948, value $5,382,159. There were 3,944 permits issued for frame buildings, 58 for concrete and steel and 57 for brick and tile.

# Los Angeles' Unique "Speedless Way"

By MORRIS M. RATHBUN, in the Roadmaker, Excavator & Grader

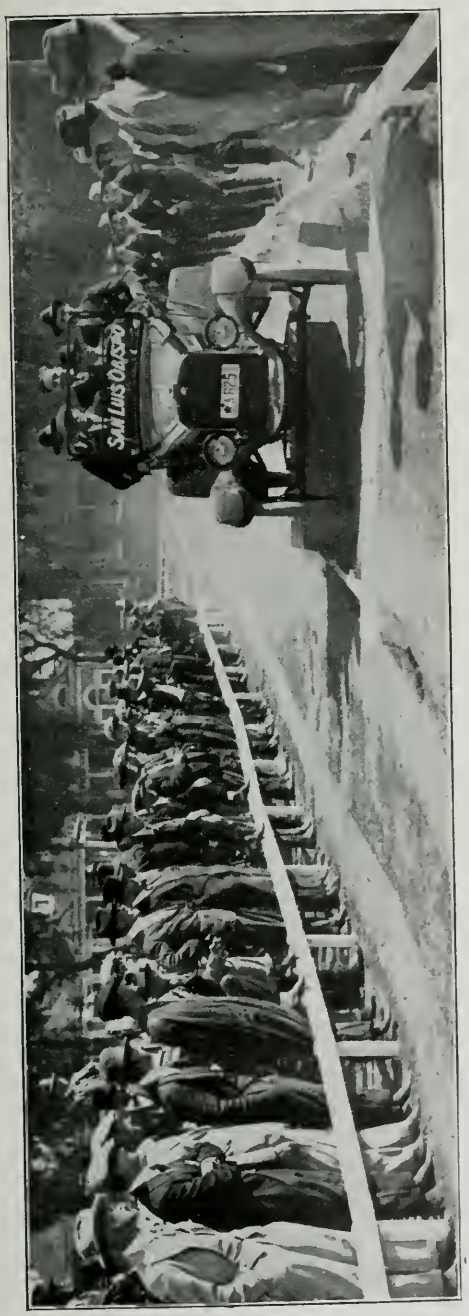
USUALLY proclaiming in stentorian tones to the world that it has the finest system of improved highways extant, Los Angeles now admits having one of the roughest and crookedest bits or road in the United States—almost in the heart of the city.

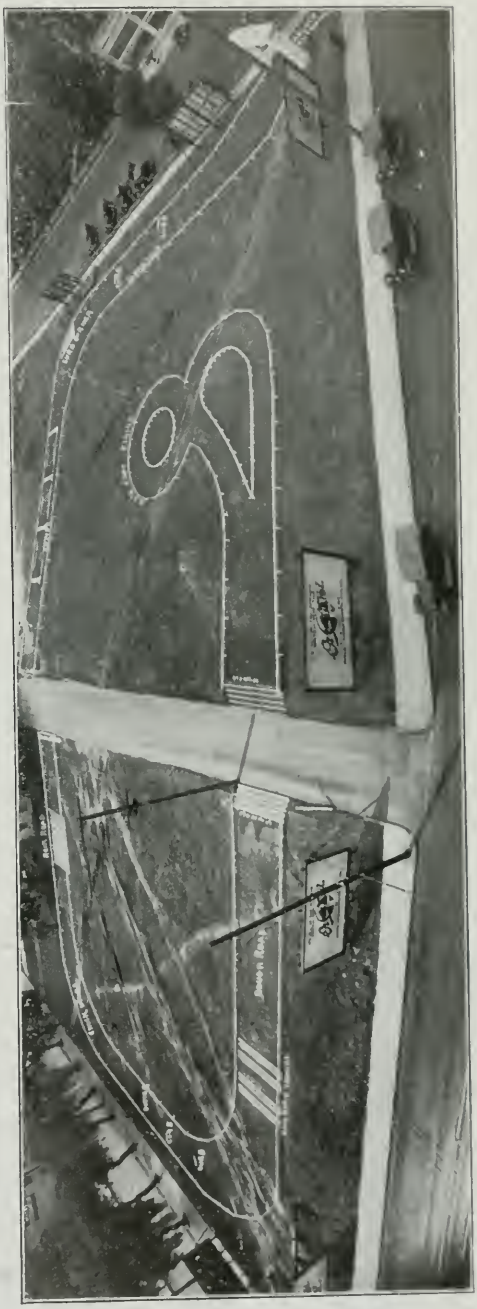
But this admission, however, is accompanied by an explanation designed to clear all doubts as to its laxity in street improvement, and to emphasize further that it is necessary to go a long ways from home to find a piece of road sufficiently bad to give a thorough test to the endurance qualities of an automobile.

This unique and rough little highway was built by an enterprising automobile company in a vacant lot close to the downtown district and opposite its salesrooms.

Experience has taught the company that the average purchaser of a new car was eager to learn how it would stand up under rough usage. Almost any car, it is admitted, will do good work so long as it is kept rolling over highly improved highways.

So when prospective patrons sought a sterner test, the company was forced to send its demonstrator many miles away in an effort to get off the smooth roads. This resulted in an enormous amount of time and demonstration. To



TWO VIEWS OF LOS ANGELES' NEW "SPEEDLESS WAY"

eliminate this expensive item of showing cars, the company constructed its own rough road, covering an entire city block, bisected by an alley.

In the short stretch of road built there wide-awake people placed every conceivable obstacle and all sorts of dips and bumps, including a couple of short turns. Even small flights of steps were constructed, and railroad tracks were laid straight across, without being set into the ground. A bit of broken rock, abutting street curbs, boulders and ruts were sprinkled liberally over the course.

A time was set for the formal opening of the new "speedless way" and large crowds of interested spectators attended the demonstration of cars.

It was found later that showing what one car could do in "bumping the bumps" developed a keen rivalry among owners of other cars.

Of course, no objection was had to throwing open the company's demonstration ground to all car owners and, as a result, automobile repair men are having a decided increase in business. It also has been learned that secret wagers are being made by proud owners of cars as to which can drive the course with the least damage to his machine.

So far as known, this is the first instance recorded where highway improvement has developed so extensively as to force the construction of a piece of bad road.

## Many Tuec Cleaners in Use

The Tuec Stationary Vacuum Cleaner is being specified by Pacific Coast architects more extensively than ever before. Both the San Francisco and Los Angeles offices report a very successful year, some of the largest buildings to be erected in these two cities having been equipped with Tuec one or two sweeper machines. Following is a partial list of San Francisco installations placed through the San Francisco Compressed Air Cleaning Company, Stockton and Sutter streets:

Standard Oil Co., "Two Unit" Tuec four-sweeper system at the Richmond refinery.

Gilbert M. Voorheis, Modesto, one sweeper Tuec system for a 3-story residence.

P. J. Walker Co., one sweeper Tuec vacuum system for the Chevrolet Motor Company's Administration building, Oakland. Architect, Geo. Kelham.

One sweeper Tuec system for the Community Apartment house, Hyde near Greenwich street. T. Paterson Ross, architect.

Mr. C. J. Hillard, high duty one-sweeper Tuec vacuum system for the Hillard Apartments, Washington and Laurel streets. Alfred H. Jacobs, architect.

St. Vincent Parochial school, Vallejo; Smith O'Brien, architect; one sweeper Tuec vacuum system.

Livingston department store building; G. A. Lansburgh, architect; two sweeper Tuec vacuum system.

Residence of Mr. Oscar Heuter, on Vallejo street; John H. Powers, architect; Tuec one sweeper plant.

Mrs. H. O. Throwbridge, a one sweeper Tuec vacuum plant (truck type), for the Burlingame apartments, Post and Polk streets, San Francisco.

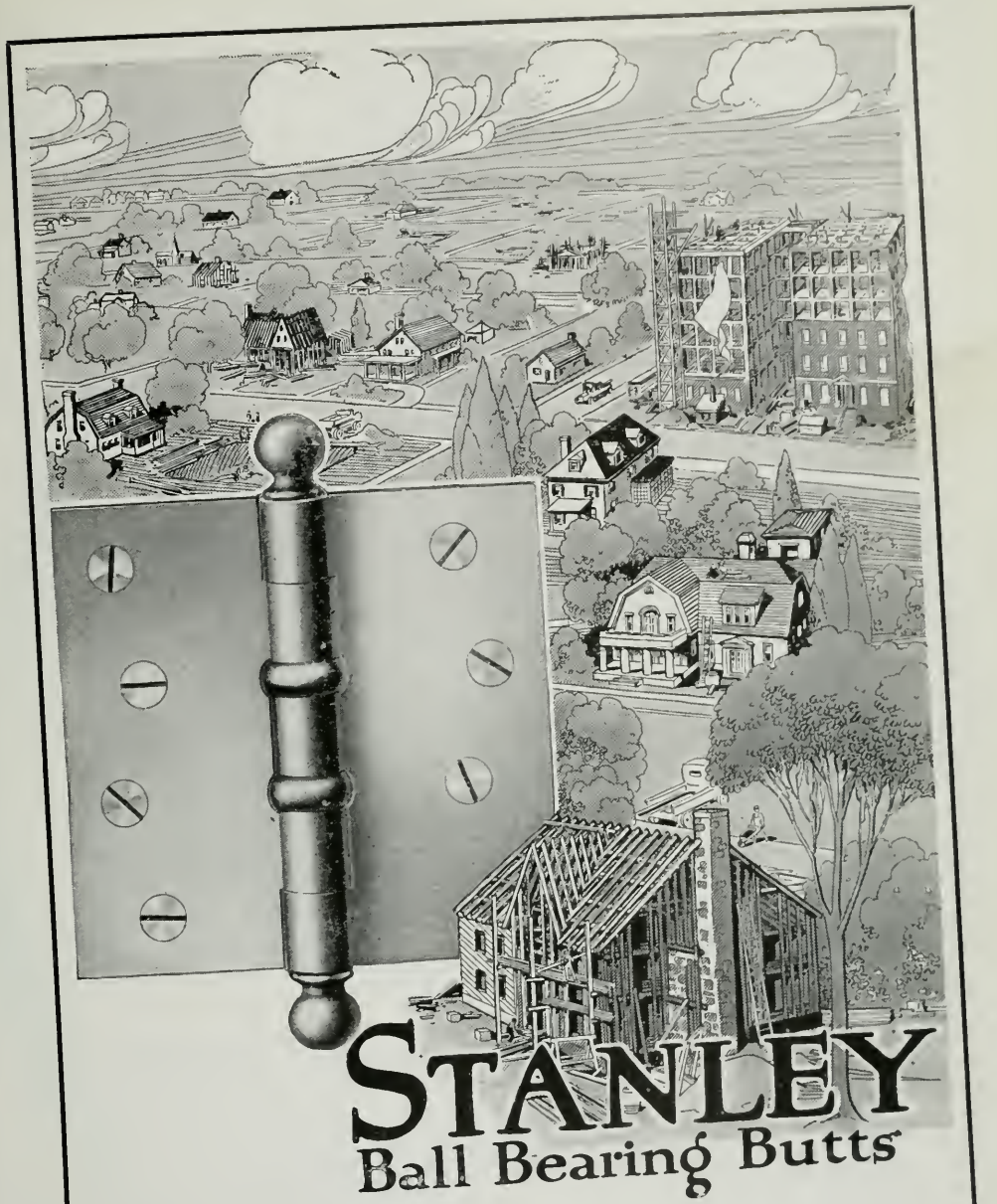
## Old Plumbing Should Be Replaced

There are many million dollars' worth of old plumbing in our cities throughout the length and breadth of our country, that is old, out of date, and insanitary, and which should be replaced by new and the latest improved plumbing and heating systems. Enter any of the older hotels, regardless of its class or reputation, and any plumber will see enough room for improvement that will almost drive him to see the manager and sell him something new. He will be able to find sufficient talking points that every salesman must have along in selling his goods, which will class him as a salesman of experience. That the ultimate health of its guests is being guarded by the hotel management is valuable to the hotel.

Good plumbing is a highly important feature of any hotel accommodation, and the better it is kept, the better is the hotel's patronage going to be. It is more than an investment for the hotel, it is good advertising. Its benefits are manifold which a wide-awake man can present to any live hotel management convincingly. And what applies to hotels

HARDWOOD HEADQUARTERS
ASH-BASSWOOD-BIRCH
AROMATIC RED CEDAR
COTTONWOOD-ELM-HOLLY
SOUTHERN RED GUM
HICKORY-LAUREL-MAPLE
OREGON MAPLE-PLAIN OAK
- QUARTERED OAK -
WYBROCK BENDING OAK
POPLAR--WALNUT

BOXWOOD-EBONY-IRONBARK
JENISERO-KOA-SPANISH CEDAR
LIGNUMVITAE-MAHOGANY
ROSEWOOD-TEAK-RED BEAN
SPOTTED GUM-CIRCASSIAN WALNUT
LUMBER--TIMBER
HARDWOOD FLOORING
WYBRO VENEERED PANELS
DOWELS-TREENAILS-VENEERS
WHITE BROTHERS
FIFTH and BRANNAN STREETS SAN FRANCISCO, CAL.



# STANLEY
## Ball Bearing Butts

*Mr. Stanley Worker Says:*

"In the era of big building that is upon us, reputations as well as buildings will be built. "The reputation for judgment and foresight of architects and builders who specify Stanley Ball Bearing Butts (and other Stanley Wrought Steel Products) will rest on a firm foundation. "Stanley Ball Bearing Butts make for permanence in all kinds of buildings—they operate smoothly and noiselessly, year in and year out."

*You will be interested in our book "AE" "Buildings You Have Seen."*
*We will be pleased to send you a copy post paid on request.*

## THE STANLEY WORKS

New York
100 Lafayette Street

New Britain, Conn.

Chicago
73 East Lake Street

will apply also to all public buildings with almost equal force, but even more to apartments and residence buildings. Any run-down, building commanding a low rent, will be found to have antiquated plumbing and heating systems. And with bad plumbing and heating systems, it will be found that besides bringing low rentals, the tenants are hard to keep, changing frequently, with enough resulting losses to cover the investment in new systems.

## Criticism of the Sheet Metal Dealer

Editor, The Architect and Engineer:

I find your magazine of very practical use, notably in the November issue, it was useful to have the wage scale and cost of the general material to bring to my association discussions, in our stabilization proceedings.

Then, too, the article under the caption, "Impregnable Position of the Architect," and others as to the responsibility of the architect, interests me very much.

I herewith offer you some facts and suggestions that ought to be clarified by publication in your magazine. These pertain to actual occurrences in the sheet-metal-builders' line. The SMETALER (a generic term) is here to stay with the carpenter, plumber, painter, etc.

Without criticism there is no progress or justice. Erring humanity is such that progressive justice is born of honest criticism. These few citations may be duplicated in every large city.

A man in the third city of the United States, who had accumulated a competence, and who probably thought "to the devil with the hindmost" and was away on a vacation when he commissioned an architect to make plans and design a $50,000 building. He made this money, and more, too, in the architectural sheet metal business—cornices, window caps, etc. This five-story, 50-foot front has no sheet metal trimmings; not a square foot of sheet metal on that big expanse of brick work and the only projection is of brick at the top.

A tablet of stone with the family name carved in letters two feet high has been set in the second story, and this line of business continues by the sons of the founder.

Another sheet metal supply house selling in large quantities to contracting smetalers left it all to an architect to design a Pie-a-la-mode front tor store and warehouse costing aiso about $50,000, with no sheet metal cornice on the front, but a little terra cotta at the top. This tapestry brick front must be entered by the patrons in quest of sheets of copper and galvanized iron to make cornices and window caps for the neighbors, and the architect let slip an opportunity to use the products of the house in four different forms—ceilings, doors, shutters and cornices.

In a third case a firm established fifteen years built a seven-story building for its sheet-metal store and warehouse, selling also largely to contracting Smetalers, but did not use a square foot of sheet metal on this big front. And the architects in the latter two cases were well established persons.

It is needless to enlighten the readers of this magazine with the poor excuses that the proprietors of these places give for this slight and boomerang crack at their trade. What is to the point, however, how far were these well-known architects responsible for this lack of perspicacity?

The buildings are located in the center of the city and on wide streets, and they offer splendid opportunity for a masterpiece of work in their own material.

The writer, who is a contracting Smetaler and has had his office-shop front illustrated five times in trade papers, showing a remarkable example of consistency, feels that if he were an architect and was commissioned by a leather merchant to design a store front he would ask, where can I use leather? Though not a building material, it would be logical and consistent.

Something that typifies the business within should be the first thought of the architect. Generally the facade of a building makes its sale, and for business it draws trade or repels it.

* * *

Galvanized cornices, in use now about fifty years, are supposed to have originated in Cincinnati, Ohio, and that is where the best machinery for its production has been made. Some examples of this first work are yet in use. Copper came into use much later, and was perfected when cold rolled sheets were produced for cornice work. This semi-tempered copper makes a permanent article for architectural detailing: in fact, many details can be worked out that are impossible in other materials, notably stone and terra cotta. A drip member can easily be formed in sheet metal.

The sheet metal cornice business is stemming the tide, and for lack of special boosting is not advancing as its intrinsic merits warrant.

The writer had a resolution passed at the convention of the National Association to have a committee named for the furtherance and conservation of cornice work, and one feature of its operations was to be to gain the confidence of all architects by furnishing them, for their private information, with details concerning the tricks of the trade as they cropped up by unfair contractors, also to furnish helpful suggestions for specification writers.

Presuming this magazine is not apt to be read by the tricksters, herewith are a few of their tricks:

Twenty-four gauge galvanized sheets being specified, the slicker uses the gauge on the drip side or end of the sheet, that is, the part that comes out of the bath last and has a thicker coating than the opposite end. This will gauge two numbers thicker at least.

Then, too, when 16-ounce copper is specified, the interested parties can strew samples of 16-ounce on the ground or about the works, and mislead the inspector, while the mechanics are using 12 and 14-ounce on the roof, or above.

If the majority, who are honest, will carry this scheme out, much will be economized. All trades pursuing this policy will be conserved.

Very truly yours,

LOUIS GICLAS,
Contracting Smetaler.

Washington, D. C., Jan. 31, 1920.

## Should Have Certificates Recorded

The following letter has been sent out by the Northern District, California State Board of Architecture, which is intended as a warning to architects who fail to record their certificates:

December 12, 1919.

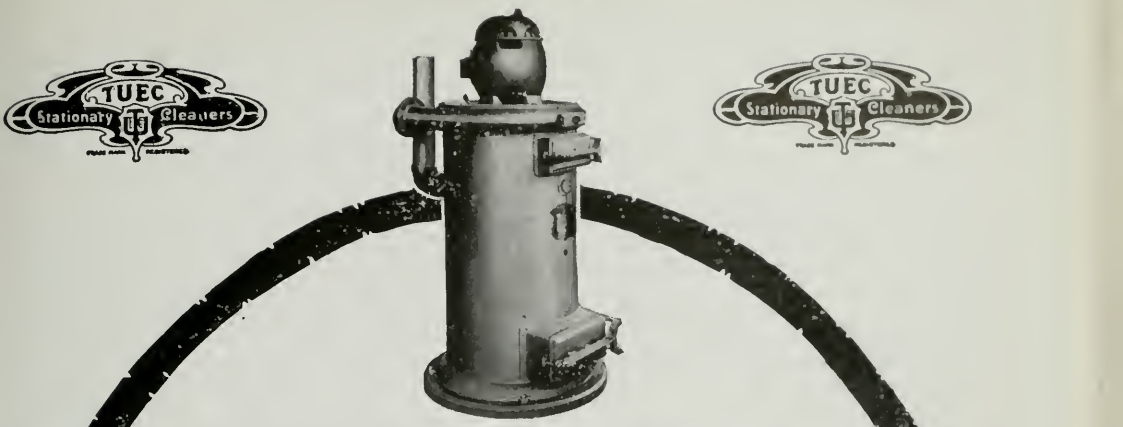
Dear Sir:—Many certificated architects fail to comply with Section 4 of the "Act to Regulate the Practice of Architecture," which provides that each certificated architect shall have his certificate recorded in the office of the County Recorder, in each and every county in this State in which the holder thereof shall practice. Your failure to observe this provision may jeopardize your position in the event of legal proceedings of any kind in which you might become involved.

It has also been brought to the attention of the Board that the use of the seal on all drawings as mentioned in Section 5 has been neglected. In the opinion of Mr. John R. Selby, attorney for the Board, this provision of the act is mandatory as to the use of a seal.

It cannot be too forcibly brought to your attention that it is incumbent on you to assist in upholding professional standards by using all legitimate means to impress the public with the dignity of the position of the certificated architect, and by using the seal on your drawings and other documents you will be assisting very materially to this end. The impression of the seal here affixed is submitted as being correct as to form. The seal when applied to tracings will blue-print better if slightly blackened with a pencil.

Yours very truly,

CALIFORNIA STATE BOARD OF ARCHITECTURE,
NORTHERN DISTRICT.
SYLVAIN SCHNAITTACHER, *Secretary.*




# Vacuum Cleaning in Hospitals

The architect engaged to design a new hospital building might forget to include in his plans and specifications a Stationary Vacuum Cleaning System, but the hospital organization, or its building Committee, would be certain to remember. For no hospital without such cleaning equipment can claim to be modern. The forehanded architect will save himself any embarrassment by investigating and familiarizing himself with the several cleaning plants on the market. A little inquiry will show him why the TUEC Stationary Suction Cleaner is used and endorsed by more hospitals than all other vacuum cleaners combined. Send us your name and we will mail you catalogue and Special Hospital Bulletin.

**Toronto, Ont.** **The United Electric Co.** **CANTON, OHIO**

*California Distributors*

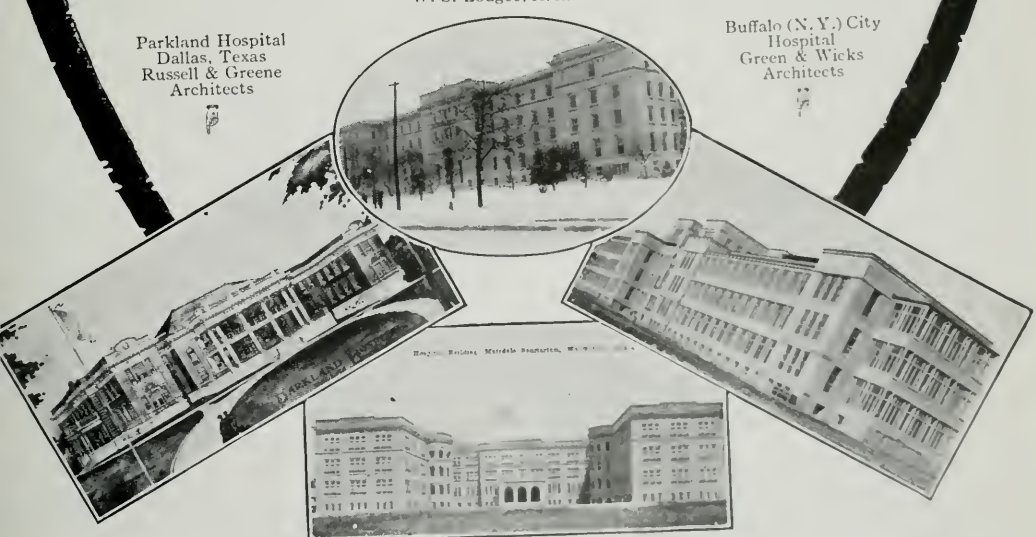
**S. F. COMPRESSED AIR CLEANING CO.**
**397 Sutter Street, San Francisco**

**BARKER BROS.**
**724 S. Broadway, Los Angeles**

St. John's Hospital, Cleveland, O.
W. S. Lougee, Architect

Parkland Hospital
Dallas, Texas
Russell & Greene
Architects

Buffalo (N. Y.) City
Hospital
Green & Wicks
Architects



Main Bldg., (Wis.) Sanitarium Muirdale
R A Messmer & Bro., Architects

## Building a Home in a Day

Editor The Architect and Engineer of California:—

Enclosed you will find an article which I hope will be useful. I have often heard of a home being built in three days, but one day seems almost unbelievable, especially as in this instance, it met all requirements of the building laws:

One evening there was a vacant lot in the city of Hamilton, Ontario. The next evening there was a three-story, nine-room house, complete in every detail, including the cellar, on that lot. When the workmen started, not even a spadeful of earth had been upturned on the lot, and the entire undertaking was completed in one day of twenty-four hours. Of course, there were more than three hundred men engaged, and throughout the night great clusters of arc lamps supplied light for the workmen. The house was built during the city's centenary celebration, just to show what could be done. The workmen not only succeeded in building the house within the twenty-four hours, but they plastered, papered, and otherwise decorated it, and installed the furniture within that time. The building is thirty-four by thirty-three feet, outside measurements, and has a complete basement in addition to the two main stories and finished attic. There was nothing slipshod in the workmanship, as it complied with the stringent building laws of the city. After the house was built a small admission was charged, and the curious thronged to see it every week day during the centenary celebration. A. D.

[Editor's Note.—The Hamilton, Ontario case is not an exception other than that it is probably the largest house on record to be completed in a single day. A couple of years ago a small bungalow was erected on a Sunday at Neptune Beach, Alameda, by members of the various labor unions. It is still standing and in good condition.]

## Of Interest to Sub-Contractors

The Architect and Engineer,
Foxcroft Building,
San Francisco, California.

Gentlemen:

This office is compiling a mailing list of firms from whom bids may be solicited for furnishing building materials in cases where it is intended to let contracts separately for labor and material for constructing federal buildings.

The following is a list of the materials on which bids may be solicited, and the office would be glad to have a list of prospective bidders in San Francisco and contiguous territory who would like to have their names placed on the mailing list to receive specifications from time to time as work is placed on the market:

Asphalt materials
Brick
Cement
Coal tar materials
Finish hardware
Finish flooring and wainscot
Glass
Granite
Limestone
Lumber
Painting materials
Plastering materials
Plumbing fixtures
Plumbing and heating materials
Reinforcing steel
Roofing slate
Sand and gravel
Sanitary slate and fittings
Screens
Sheet metal
Skylight
Structural steel
Structural terra cotta
Vault doors
Wiring materials

Respectfully,

Wm. Arthur Newman,

Acting Supervising Superintendent.

## Portland Architectural Club Banquet

The annual banquet of the Portland Architectural Club was held at the University Club in January, Mr. A. Glenn Stanton, president of the club, acting as toastmaster.

The principal address of the evening was made by Mr. C. H. Whitaker, his subject being "The Professional Idea."

Mr. Clayton Baldwin, vice-president, spoke on the present conditions and aim of the club, bringing out the fact that it was their intention to put it back on its pre-war basis, when it included in its membership architects, contractors and materialmen.

Resolutions protesting against the action of the Portland Realty Board in seeking a repeal of the city planning bill at the present session of the legislature were adopted.

A feature of the evening was a competitive drawing contest, in which each man sketched the portrait of the one opposite. Prizes for the best sketches were awarded to Mr. Mills and Mr. Purcell.

A committee to work out the professional idea as it applies to Portland was appointed, with Mr. A. E. Doyle, chairman; Mr. O. G. Hughson, representing the Builders' Exchange; Mr. M. W. Lorenz, representing the contractors; Mr. Clayton Baldwin, representing the draftsmen; Mr. Otto Hartwig, representing labor, and Mr. Earl I. Bryan, representing the architects.

Sixty-seven were present.

## Sewers, Health and Taxes

The Los Angeles Pressed Brick Company is conducting an effective campaign in the interests of "Vitrified Glazed Clay Pipe for Sanitation." The following is a summary of some of the literature sent out by the company:

Sanitary sewers of Vitrified Salt Glazed Clay are indispensable defenses against disease and high taxes.

Alert communities everywhere prefer them for bettering the public health and keeping taxes down.

Sewage acids that eat away the life of the thickest compounded rock are weak as water against it. Rust cannot corrupt it.

Every well-laid foot of it will outlast the community it serves as it has outlasted the marble cities of Greece and the lava of Pompeii.

Not even unreliable materials can cheapen construction as against Vitrified Salt Glazed Clay Pipe when perfect sanitation and final costs are considered, which they must always be.

No material can offer a more definite protection against the tax raising charges for sewer repair and replacement inflicted by materials that acids, frost and rust destroy.

# Present Cost of Building Materials

## With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, February 20, 1920. All prices f. o. b. cars San Francisco or Oakland.

**Note.**—For country work add freight and cartage to prices given.

**Bond**—1½% amount of contract.

**Brickwork**—
Common, $35.00 per 1000 laid.
Face, $70.00 per 1000 laid.
Common, f. o. b. cars, $15.00 plus cartage.
Face, f. o. b. cars, $45.50 per 1000, carload lots.
12x12x3 in., 10¼c. per square foot.
12x12x4 in., 11¾c. per square foot.
12x12x6 in., 16¼c. per square foot.
Hod carriers, $7.50 per day.
Bricklayers, $10.00 per day.

**Composition Floors**—30c. per sq. ft.

**Concrete Work** (material at bunkers)—

| | |
|---|---|
| No. 3 rock | $2.50 per yd. |
| No. 4 rock | 2.60 per yd. |
| Niles pea gravel | 2.60 per yd. |
| Niles gravel | 2.70 per yd. |
| Niles top gravel | 2.75 per yd. |
| City gravel | 2.25 per yd. |
| River sand | 1.65 per yd. |
| Bank sand | .75 per yd. |
| Monterey sand | 60c. per sack |
| Cement (F. O. B. cars) | $3.63 per bbl. |
| Rebate for sacks, 25c. each. | |
| Atlas "White" | $9.50 per bbl. |
| Medusa cement | 9.50 per bbl. |
| Forms | $60.00 per M |

Wage—

| | |
|---|---|
| Laborers | $6.00 per day |
| Concrete workers | 7.00 per day |
| Cement finishers | 9.00 per day |

**Dampproofing**—
Two-coat work, 30c. per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $6.00 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $9.00 per day.

**Electric Wiring**—$8.00 to $15.00 per outlet.
WAGE—Electricians, $8.50 per day.

**Elevators**—
Prices vary according to capacity, speed and type. Consult elevator companies.

**Excavation**—
$2.00 per yard.
Teams, $12.00 per day.
Trucks, $30.00 to $40.00 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

**Fire Escapes**—
Ten-foot balcony, with stairs, $100.00 per balcony.
Cost of ornamental iron, cast iron, etc., depends on design.

**Glass**—
(Consult with manufacturers.)
21 ounce, 25c. per square foot.
Plate, 83c. to $1.75 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 40c. per square foot.
**Note.**—Add extra for setting.
WAGE—Glaziers, $8.00 per day.

**Lumber**—
Common (at building), $54.00 per 1000.
Flooring—

| | |
|---|---|
| 1x3 No. 1 | $125.00 per 1000 |
| 1x3 No. 2 | 117.00 per 1000 |
| 1x4 No. 1 | 120.00 per 1000 |
| 1x4 No. 2 | 117.00 per 1000 |
| 1x4 No. 3 | 110.00 per 1000 |
| 1x6 No. 1 | 125.00 per 1000 |
| 1x6 No. 2 | 122.00 per 1000 |
| 1¼x4 and 6 No. 1 | 125.00 per 1000 |
| 1¼x4 and 6 No. 2 | 120.00 per 1000 |
| Slash grain, 1x4 No. 1 | 94.00 per 1000 |
| Slash grain, 1x4 No. 3 | 89.00 per 1000 |
| No. 1 common run to T. & G. | 72.00 per 1000 |
| Lath | 20.00 per 1000 |

Shingles—

| | |
|---|---|
| Redwood, No. 1 | $1.60 per bdle. |
| No. 2 | 1.50 per bdle. |
| Red cedar | 1.85 per bdle. |

(Add cartage to above)

| Hardwood Lumber— | Per ft. |
|---|---|
| 1" FAS Ash | 32c. |
| 1" FAS Birch | 32c. |
| 1" FAS Southern Red Gum | 30c. |
| 1" FAS Jenisero (Genezero) | 27½c. |
| 1" FAS Hawaiian Koa | 32c. |
| 1" FAS Mahogany | 50c. |
| 1" FAS Maple | 27c. |
| 1" FAS Plain Oak | 32c. |
| 1" FAS Quartered Oak | 50c. |
| 1" FAS Walnut | 45c. |

(Above quotations at yard.)

Hardwood Floors—
Maple floor (laid and finished), 30c. per foot.
Factory grade floors (laid and finished), 26c. per foot.
Oak (quartered, finished), 45c. per foot.
Oak (clear), 32c. per foot.
Oak (select), 30c. per foot.
WAGE—Floor layers, $9.00 per day.

Hardwood Floors (Laid)—
Clear plain oak, per sq. ft. ..... 30c.

In flooring the usual grades of oak used are

| | Grades | Quartered Sawed | Plain Sawed |
|---|---|---|---|
| 5/16" | Clear | " | " |
| | Select | " | " |
| 1"x3"-13/16"x2¼" | Clear | " | " |
| | Select | " | " |
| | No. 1 (very little used) | | |

**Hardwood Floors (not laid)—**

| | | Per M ft. |
|---|---|---|
| 13/16x2¼" face | Clear quartered oak | $470.00 |
| | Select quartered oak | 360.00 |
| | Clear plain oak | 350.00 |
| | Select plain oak | 315.00 |
| | Clear maple | 225.00 |
| | Clear maple—white | 255.00 |
| 13/16x3¼" face | Clear maple | 230.00 |
| 1¼x2¼" face | Clear maple | 235.00 |
| ⅜x2" face | Clear quartered oak | 310.00 |
| | Select quartered oak | 260.00 |
| | Clear plain oak | 260.00 |
| | Select plain oak | 225.00 |
| | Clear maple | 180.00 |
| | Clear beech | 175.00 |
| | Clear red beech | 215.00 |

**Veneered Panels—**

| 24x60 in., ¼ in., 3-ply, 1 side: | Per ft. |
|---|---|
| Ash | 26c. |
| Hungarian Ash | 39c. |
| Birch | 26c. |
| Curly Birch | 39c. |
| Elm | 24c. |
| Jenisero (Genezero) | 37c. |
| Southern Red Gum (plain fig.) | 32c. |
| Qtd. Southern Red Gum | 39c. |
| Hawaiian Koa | 39c. |
| Maple | 24c. |
| Birdseye Maple | 47½c. |
| Mahogany | 39c. |
| Oregon Pine | 19½c. |
| Plain Oak | 31c. |
| Quartered Oak | 39c. |
| Walnut | 39c. |

**Millwork—**

O. P., $150 per 1000. R. W., $150 per 1000.

Double hung box frame windows (average) with trim ..... $10.50 each

Doors, includ. trim (single panel) ..... 15.00 each

Doors, including trim (five panel) ..... 8.50 each

Screen doors ..... 4.50 each

Window screens ..... 3.50 each

Medicine cases ..... 5.00 each

Cases foar kitchen pantries seven feet high, per lineal foot ..... 10.00 each

Dining room cases same price, if not too elaborate,

Flag poles, per foot ..... 1.50

etc. ..... $135.00 per M

**Labor—**

Rough carpentry, warehouse heavy framing, $15.00 per 1000.

For smaller work, average, $23.00, $30.00 per 1000.

WAGE—Laborers, $6.00 per day.
Carpenters, $8.00 per day.

**Marble—**

| | |
|---|---|
| Columbia | $1.50 sq. ft. |
| Alaska | 1.50 sq. ft. |
| Tennessee | 1.75 sq. ft. |
| Verde Antique | 3.00 sq. ft. |

**Painting—**

Two-coat work, 35c. per yard.
Three-coat work, 45c. per yard.
Whitewashing, 5c. per yard.
Cold water paint, 10c. per yard.
WAGE—Painters, $8.00 per day.

**Patent Chimneys—**

| | |
|---|---|
| 6-inch | $1.50 lineal foot |
| 8-inch | 1.75 lineal foot |
| 10-inch | 2.25 lineal foot |
| 12-inch | 3.00 lineal foot |

**Pipe Casings**—$8.00 each.

**Plastering—**

Interior, on wood lath, 80c per yard.
Interior, on metal lath, $1.25 per yard.
Exterior, on brick or concrete, $1.00 per yard.
Portland White, $1.25 to $1.50.
Interior on brick or terra cotta, 60c to 65c per yard.
Exterior, on metal lath, $2.25 to $2.50 per yard.
Wood lath, $17.50 at yard per 1000.
Metal studding, $1.00 to $1.25 per yard.
Metal studding, with lath and plaster, $1.90 per yard.
Galv. (metal lath), 38c. and up per yard, according to gauge.
Lime, f. o. b. warehouse, $2.40 per bbl.
Hardwall plaster, $20.00 per ton f. o. b. warehouse.
WAGE—Hod carriers, $8.00 per day.
Plasterers, $10.00 per day.

**Plumbing—**

From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $9.00 per day.

**Reinforcing Steel—**

Base price for less than car load lots, $4.75. per 100 lbs.
Car load lots, $4.35 per 100 lbs., f. o. b. San Francisco. (Mill delivery.)

**Roofing—**

Five-ply tar and gravel, $7.00 per square.
Tile, $35.00 per square.
Redwood shingle, $10.00 per square.
Cedar shingle, $11.00 per square.
Reinforced Pabco roofing, $8.25 per square.
WAGE—Roofers, $8.00 to $9.00 per day.

**Rough Hardware—**

Nails, per keg, $8.50 base and very scarce.
Deafening felt, $110.00 per ton.
Building paper, P. & B.,
1 ply, $3.85 per 1000 ft. roll.
2 ply., $5.75 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.50 per hank 100 feet.
Common, $1.75 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

**Skylights—**

Copper, $1.25 a square foot (not glazed).
Galvanized iron, 50c. a square foot (not glazed).
WAGE—Sheet metal workers, $9.00 per day.

**Store Fronts—**

Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.35 per lin. foot.

**Structural Steel**—$150.00 per ton.

This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.

**Tile—**

White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $2.00 per sq. foot, laid.

**Windows—**

Metal, $2.00 a square foot.

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### Book Review

APPLIED SCIENCE FOR WOOD WORKERS and APPLIED SCIENCE FOR METAL WORKERS by William H. Dooley, Principal of the Navy Yard Apprentice School under the New York City Board of Education. The Ronald Press, 20 Vasey street, New York. Price $2.00 each.

The former is a practical textbook on Physics, Chemistry, etc., which teaches the principles of science in such a way that the technical or apprentice student will thoroughly understand the actual work he does in the shop.

It is written in a clear and concise style. Difficult principles are explained in simple language and the interest of the student is maintained by leading him from the elementary to the more difficult phases of the subject. Numerous line drawings and photographs add to the value and clarity of the text.

Applied Science for Metal Workers is a companion volume to the other and meets the special needs of the metal-working trades in a like manner.

### Changes in Edw. R. Bacon Co.

Edw. R. Bacon Co., distributors of contractors' equipment, have moved their Los Angeles offices from the Broadway Central building to a new building at 165 E. Jefferson street, where they will combine offices, display rooms and warehouse. They will hereafter carry in stock in Los Angeles, as well as in San Francisco, Jaeger concrete mixers, Foote pavers and other equipment, besides a complete stock of parts. Mr. W. H. Shoemaker is Los Angeles manager, succeeding Mr. A. L. Jones, who has returned to San Francisco to become assistant manager for the Coast. Mr. E. A. de St. Germain succeeds Mr. Chas. Kelly as general manager at San Francisco.

### Studio Dinner

Messrs. Henry F. Whitney and F. Pierpont Davis entertained the members of the Southern California Chapter of the American Institute of Architects at a dinner at their studio, 3215 West Sixth street, on January 22. Mr. Chas. H. Whitaker, editor of the Journal of the A. I. A., who is making a tour of the country and visiting all the chapters of the institute, was the speaker of the evening.

### City Planning in Arizona

As a result of the agitation for a new municipal and county building, city planning has become a live question in Phoenix, Arizona. Suggestions that a civic center be established before these improvements are undertaken are being considered. The city commission has advised that the initiative in the city planning movement be taken by the Chamber of Commerce, which will probably call a conference to discuss the subject.


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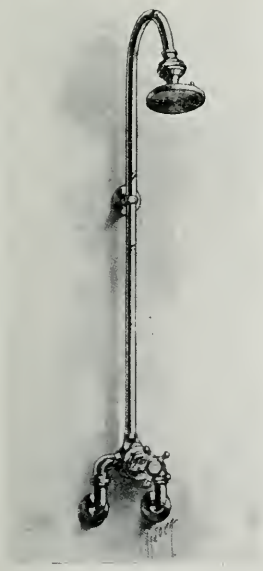

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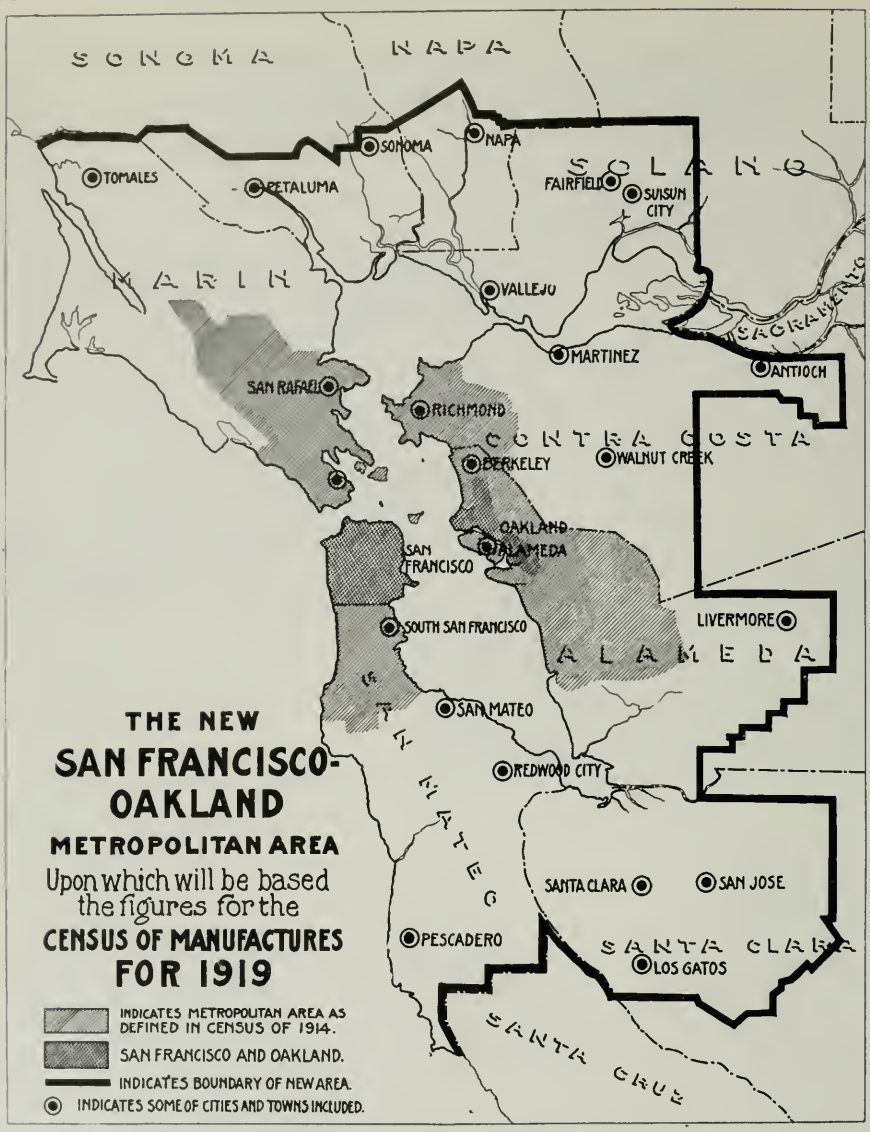


SAN FRANCISCO'S NEW INDUSTRIAL BOUNDARY (See editorial on page 109)

### School Building

Messrs. Jeffery & Schaefer, 1106 Kerckhoff building, Los Angeles, have been commissioned to prepare plans for a grade school building for Talbert, Orange county, school district. The building will probably contain four classrooms and will cost $25,000.

### Rubber Factory

The United States Compression Inner Tube Company, a $5,000,000 rubber corporation of Tulsa, Okla., contemplates the erection of a rubber factory in Los Angeles or its immediate vicinity, according to an announcement made by Mr. M. C. Hale, president of the company.

### Club Houses Planned

The Westwood Park Association of San Francisco has a movement under way to devote the entire block above Monterey boulevard and opposite Miramar avenue to a community playground, clubhouse and kindergarten. Mr. Clarence F. Pratt, president of the association, is one of the leaders in this activity.

In St. Francis Wood the association is planning a clubhouse to be erected on the site of the present tract office.

Mr. I. W. Brown, president of the Parkside Club, is taking the initiative in a club building for this section of the district.

The wants of Ingleside Terrace in regard to a club are already provided for, this tract having had a clubhouse for some time.

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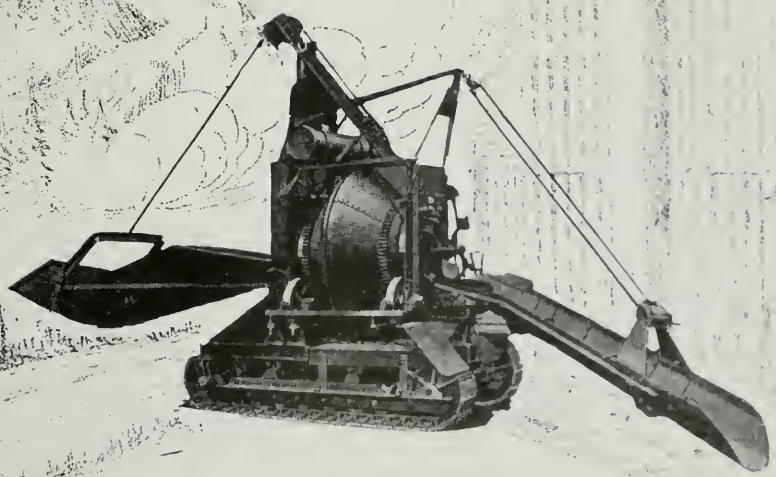

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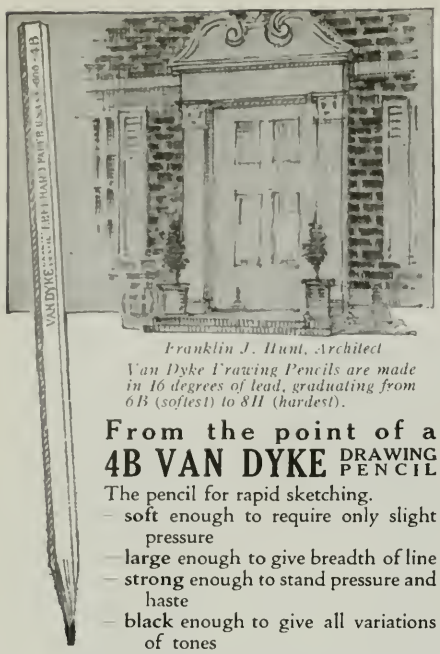


*Franklin J. Hunt, Architect*

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## Praise for Tile House Competition

The following unsolicited letter has been received by Mr. Howard Frost, president of the Los Angeles Pressed Brick Company, from the secretary of Southern California Chapter, A. I. A.:

January 22, 1920.

President and Directors Los Angeles Pressed Brick Co., Los Angeles, California.

Gentlemen: At the annual meeting of the Southern California Chapter of the American Institute of Architects, held at the City Club January 13, 1920, the recent competition conducted by your organization came before the Chapter for discussion.

The motion was carried, instructing the Secretary to write the officers of your company, commending the manner in which you conducted the competition in accordance with the best practice and usage of the profession, appointing as professional advisers Institute men upon the jury to make the awards.

Some of the advantages of a jury so constituted are, that it thoroughly understands and can explain the intent of the drawings, and discover from them their author's skill in design, arrangement and construction.

Yours very truly,

R. Germain Hubby,
*Secretary.*

## Waiting At the Fire

"Number, please?"

"Never mind, Central. I wanted the Fire Department, but the house has burned down now."—Life.

## Architects Oppose Tall Buildings

Among the matters discussed at the twenty-ninth annual meeting of the architects of the Province of Quebec, at Quebec, was the projected construction of a sixteen-story hotel in Montreal. A resolution was passed and forwarded to the Private Bills Committee of the Provincial Legislature, also to the Board of Commissioners of the City of Montreal, in which the association placed itself on record as being unanimously opposed to the erection of a sixteen-story building. One of the principal arguments advanced in the resolution is that the average street in Montreal is not more than 66 feet in width, while the by-laws at present limit the height of buildings to 130 feet or about 10 stories, which is practically twice the width of the average street and the architects contend that it would not be wise to go beyond this.

A lecture was delivered by Mr. I. G. Smith, Dominion Fire Commissioner, in which he quoted statistics to show that in 1918, Canada had sustained a fire loss of eight dollars per capita against forty-five cents in England, thirty-nine cents in France and fourteen cents in Belgium. He suggested as a remedy, a better education of the people in fire prevention, also the remodelling of the building by-laws throughout the country.

Later a delegation of architects waited on Hon. A. Galipeault, Minister of Public Works, urging the Government to revise the by-laws regulating the construction of public buildings. It was also suggested that in future, all public buildings of any importance be built of fire-proof or at least slow-burning materials.—Contract Record.

## Prohibition a Factor in Increased Demand for New Buildings

John Barleycorn never "took much stock" in all this talk about house-owning. He preferred that his devotees rent, and he didn't care for them to have very good places at that.

Now that John Barleycorn has been outlawed and driven out of the country his one-time faithful followers are turning their attention to a good many new things—to new gas ranges, new refrigerators, new furniture, new rugs and—new houses.

They do not always buy wisely, that is true. In the first flush of freedom from the toll laid upon them by their old friend Barleycorn, there is more than a suspicion that they are buying too many silk shirts and purely ornamental fol-de-rols. But at that, it's a lot better to buy player pianos and "spiffy" socks than it ever was to buy a "souse." There is some satisfaction in buying personal adornment. There never was any in a morning-after headache.

(Continued on page 135)

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"As you see, I now use all of these articles, and your own eyes tell you how smoothly beautiful and perfect they are. Because of the exceptional purity and evenness of Armco Iron, these kitchen products are remarkably free from occluded gases, seams, scars, cracks, spots, pinholes, and other defects, which in less carefully made enameled products show through the enameling and cause ugly spots and rough places.

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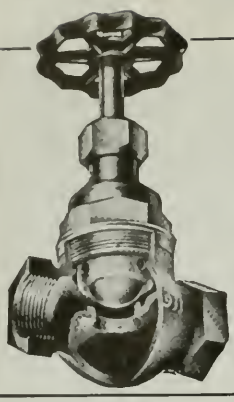

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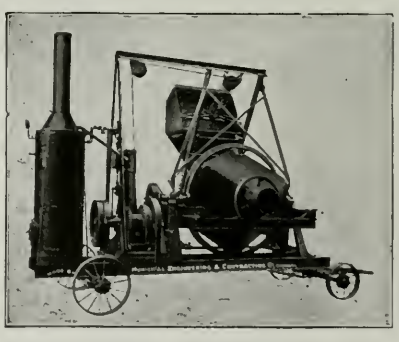

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Now, when Henry, or Carl, or George, bring home the Saturday night pay envelope, even though their increase in pay has not kept pace with the increase in the cost of living, they are money ahead. John Barleycorn has not exacted tribute. And friend wife is more likely than not to be a thrifty woman with good American common sense, and she realizes that "what with the children growing up and all" they need a new home and a better one—one that they own. So friend wife either sees a real estate agent or a contractor, or one of the home-building companies.

All of which points to this indubitable fact: Prohibition makes for more building—not less. It makes for more home owners. What percentage of the demand for owned homes is the result of John Barleycorn's smashing defeat it would be hard to say. Not being statisticians we will not even attempt to make a guess. But the fact is patent that to this latest and newest amendment may be attributed a part of the present unexampled demand for new buildings.—Improvement Bulletin.

### Opens Service Yard

California Brick Company and Livermore Fire Brick Works announce the opening of a service yard at Seventh and Hooper streets, San Francisco, (telephone Market 8250), carrying a full line of their products, including mantel brick, vitrified paving brick, sewer brick, step and walk brick, red ruffled brick, red pressed brick, common brick, partition tile, hollow building tile, fire brick, ground fire clay, brick dust, fire tile, enameled brick, buff brick, old gold brick, and flue lining.

The officers of these two companies are Mr. N. A. Dickey, President; Mr. G. C. Thomas, Terra Cotta Engr.; Mr. O. W. Stoner, and Mr. E. B. Stoddard.

### $200,000 Home for Mary Pickford

Mr. Franke Meline, 6779 Hollywood boulevard, Los Angeles, is preparing plans for a large residence to be built in Fremont Place, Los Angeles, for Mary Pickford. It will cost about $200,000.


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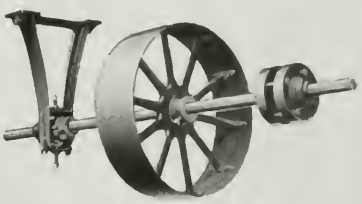

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### Architect to Build Flats

Mr. O. P. Dennis, 6372 Hollywood boulevard, Los Angeles, is preparing plans for a two-story frame and plaster flat building to be erected on Martel St. near Hollywood boulevard, for himself. It will contain four flats of four rooms and bath each.


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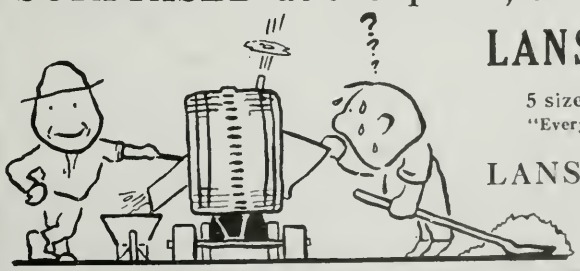

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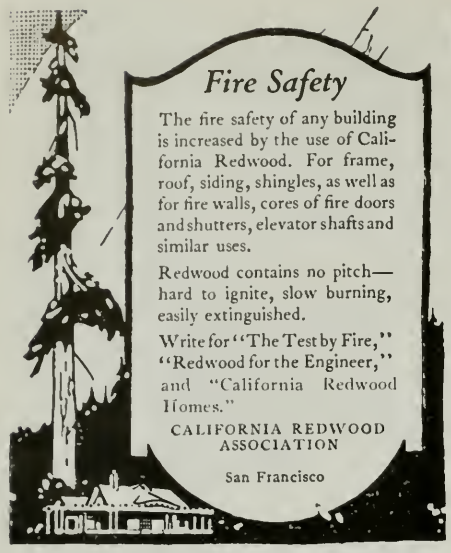
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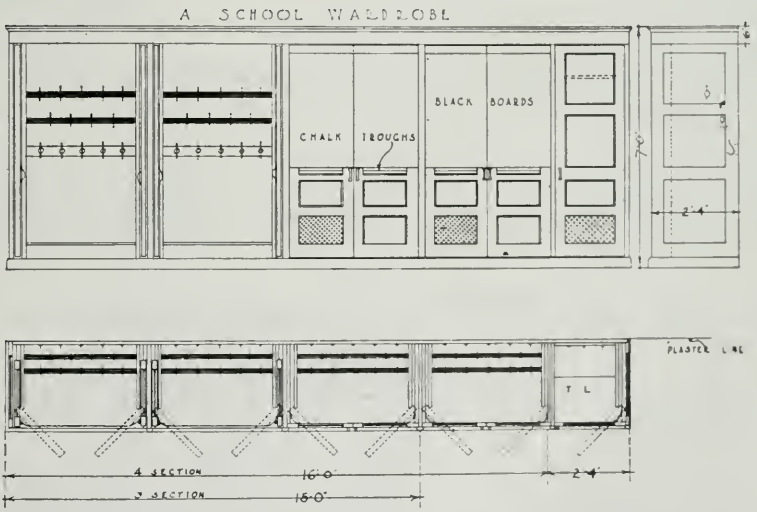


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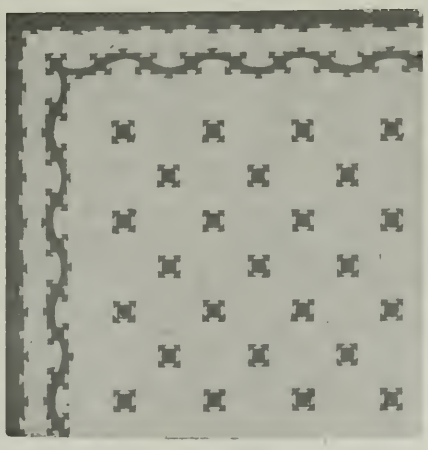

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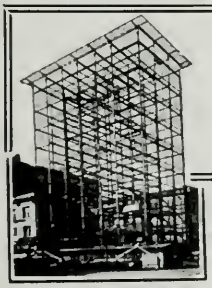

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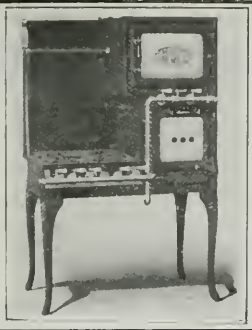

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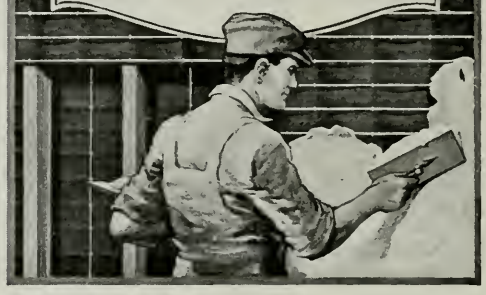

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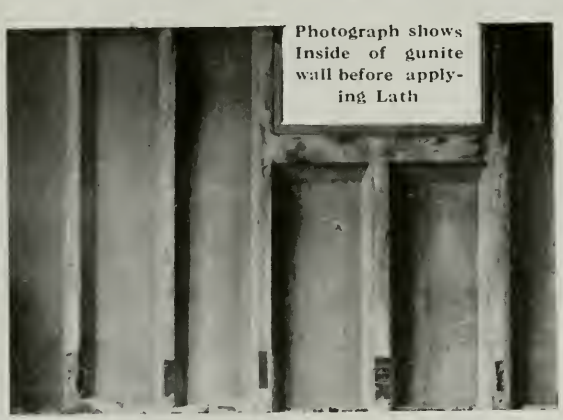

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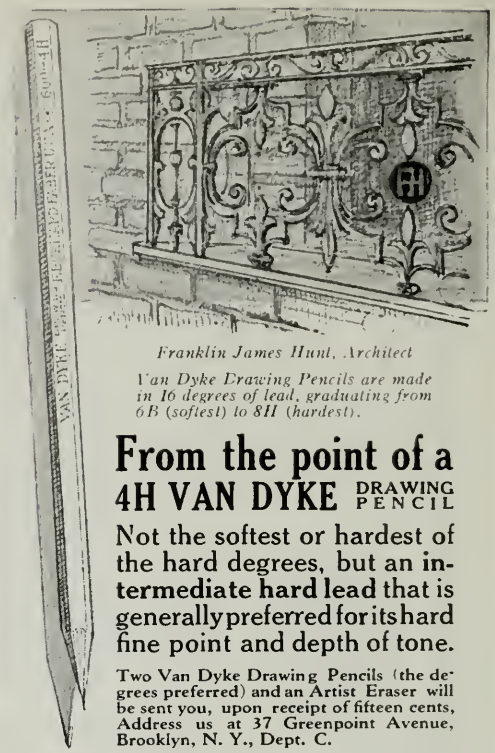


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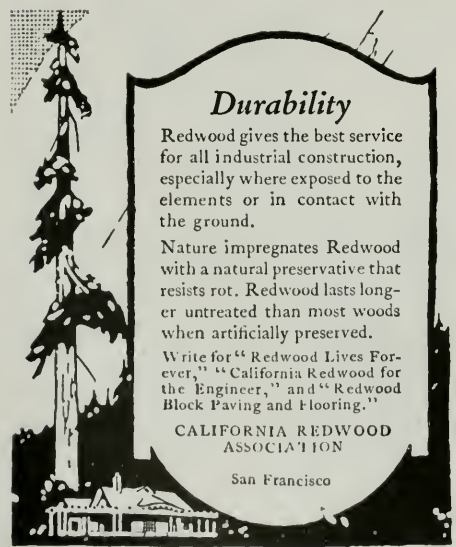

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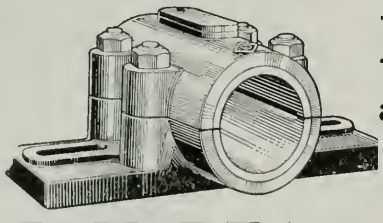

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SEATTLE
LOS ANGELES

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

BUILDING MATERIAL, SUPPLIES, ETC.
- Pacific Materials Co., Underwood Bldg., San Francisco.
- Waterhouse-Wilcox Co., 523 Market St., San Francisco.

CABINET MAKERS
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Company, 64 Rausch St., San Francisco.

CASEMENT WINDOW HARDWARE
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

CASTINGS
- Dow-Herriman Co., 140 Howard St., San Francisco.

CEMENT
- Atlas Portland Cement Co., New York and Chicago. (See advertisement for Coast Distributors.)
- Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.
- Standard and Santa Cruz Portland Cement Companies, Crocker Bldg., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
- Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR FINISH
- Concreta, sold by W. P. Fuller & Co., all principal Coast cities.
- Glidden Stucolor Liquid Cement Coating. The Glidden Company, 123 Hooper St., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies Oakland, Los Angeles, Portland, Tacoma, Spokane; and Pacific Building Materials Co., 525 Market St., San Francisco.
- Tuco Products Corpor., "Klingstone stucco," Humboldt Bank Bldg., San Francisco.
- The Paraffine Companies, Inc., 34 First St., San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
- Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
- Bay State Brick and Cement Coating, manufactured by Wadsworth, Howland Co., Boston, Mass.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
- Paraffine Paint Co., 34 First St., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING
- Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.
- Glidden Concrete Floor Dressing. The Glidden Company, 123 Hooper St., San Francisco.

CEMENT GUN
- Cement Gun Construction Company of California, 701 Balboa Bldg., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS
- Fink & Schindler, 218 13th St., San Francisco.
- Mullen Manufacturing Company, 64 Rausch St., San Francisco.
- Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL
- Haslett Warehouse Co., 310 California St., San Francisco.

CLAY PRODUCTS
- Livermore Fire Brick Works, Niles, Cal.
- W. E. Mushet Co., 502 Mission St., San Francisco.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- United Materials Co., Crossley Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS
- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
- Vulcan Iron Works, San Francisco.

COMPRESSED AIR CLEANERS
- United Electric Co., Canton, O., mfr. of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

CONCRETE CONSTRUCTION
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Clinton Construction Co., 140 Townsend street, San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Palmer & Petersen, Monadnock Bldg., San Francisco.
- Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE MIXERS
- Austin Improved Cube Mixer. Stuart S. Smith, 625 Market Street, San Francisco.
- Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.
- Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.
- Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.

CONCRETE REINFORCEMENT
- United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric. L. A. Norris Co., 140 Townsend St., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE REINFORCEMENT (Continued)
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Steel bars sold by W. S. Wetenhall Co., 450 Irwin St., San Francisco.
Triangle Mesh Fabric. Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., 527 Tenth St., San Francisco.

CONDUITS
Garnett, Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
Barrett & Hilp, Sharon Bldg., San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
R. W. Littlefield, 565 Sixteenth St., Oakland.
Unit Construction Co., Phelan Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
A. D. Collman, 110 Jessie St., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.
Monson Bros., 1907 Bryant St., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
McLeran & Peterson, Hearst Bldg., San Francisco
Robert Trost, 26th and Howard Sts., San Francisco.

CONTRACTORS' EQUIPMENT
Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
Harron, Rickard & McCone, Townsend St., San Francisco.
Lansing Company, 338 Brannan St., San Francisco.
Garfield & Co., Hearst Bldg., San Francisco.
Smith, Booth-Usher Co., 40 Fremont St., San Francisco, and 228 Central Ave., Los Angeles.

CONVEYING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
P. H. Reardon, 57 First St., San Francisco.

CRUSHED ROCK
California Building Material Company, Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Glidden's Liquid Rubber. The Glidden Company, 123 Hooper St., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS
Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
Stanley Works, New Britain, Conn. John Rountree, agent, Monadnock Bldg., San Francisco.
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS
Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
M. E. Ryan, Redwood City, Calif.
Rex Electric & Engineering Co., 253 Minna St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
Central Electric Co., 185 Stevenson St., San Francisco.
Severin Electrical Company, 185 Stevenson St., San Francisco.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
Sierra Electric Company, 515 Market St., San Francisco.
Garnett, Young & Co., 612 Howard St., San Francisco.
Butte Electrical Equipment Co., 530 Folsom St., San Francisco.
Safety Electric Company, 56-65 Columbia Square, San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.

ELEVATOR EQUIPMENT
- Elevator Supplies Company, Inc., 186 Fifth St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.
- Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

ELEVATOR DOOR HARDWARE
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

FANS AND BLOWERS
- John Ringius, 252 Townsend St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
- Standard Fence Construction Co., 77 O'Farrell St., San Francisco, and 310 12th St., Oakland.

FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco, 830 S. Los Angeles St., Los Angeles.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.
- Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- General Fire Extinguisher Company, 453 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.
- Asbestos Paints. The Glidden Company, 123 Hooper St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco,

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
- Inlaid Floor Company, 600 Alabama St., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
- Jas. A. Nelson, 517 Sixth St., San Francisco.

FUEL OIL SYSTEMS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, OFFICE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.
- F. W. Wentworth & Co., 539 Market St., San Francisco.
- Western Office Equipment Co., 467 Market St., San Francisco.

GALVANIZED IRON WORK
- Power & Pike Co., 22-24 Main St., San Francisco.
- James A. Nelson, 517 Sixth St., San Francisco.

GARAGE HARDWARE
- The Stanley Works, New Britain, Conn., represented in San Francisco, Los Angeles, Seattle by John T. Rowntree, Inc.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES
- Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 745 Folsom St., San Francisco, sole agents for California.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

GAS STEAM RADIATORS—FUMELESS, ETC.
- Clow Gas Steam Radiators, F. A. Hamilton, Agent, 101 Rialto Bldg., San Francisco.
- Ra-Do Fumeless Gas Radiators, manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

GLASS
- American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
- W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
- Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.
- J. O'Shea, 2100 17th St., San Francisco.

GRANITE
- California Granite Co., Gen. Contractors' Ass'n, San Francisco.
- Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
- Cement Rock & Gravel Co., Call-Post Bldg., San Francisco.
- Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
- Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
- Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
- The Stanley Works, New Britain, Conn.
- Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
- Inlaid Floor Co., 600 Alabama St., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., cor. Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC—GAS
- Alex. Colman, 706 Ellis St., San Francisco.
- Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC.
- Alex Coleman, 706 Ellis St., San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- A. Lettich, 365 Fell St., San Francisco.
- Mangrum & Otter, 827-831 Mission St., San Francisco.
- Moline Heat, Hobart Bldg., San Francisco.
- James & Drucker, 450 Hayes St., San Francisco.
- James A. Nelson, 517 Sixth St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
- Illinois Engineering Co., 563 Pacific Bldg., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC. (Continued)
- William F. Wilson Co., 328 Mason St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- C. A. Dunham Company, Sheldon Bldg., San Francisco.
- O. M. Simmons Co., 58 Sutter St., San Francisco.

HOLLOW TILE BLOCKS
- Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
- Ralphs-Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
- Mott Company of California, 553 Mission St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
- Holtzer-Cabot system, represented by Bittmann & Battee, 745 Folsom St., San Francisco.
- Chicago Signal Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.

HOTELS
- St. Francis Hotel, Powell, Geary and Post Sts., San Francisco.

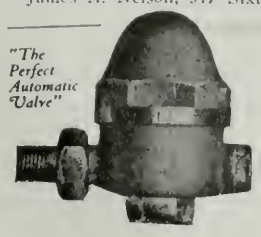
ICE MAKING MACHINES
- Vulcan Iron Works, San Francisco.
- Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

INGOT IRON
- "Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
- Ebonite Boiler Kote, sold by California Plastic Products Co., 521 Sheldon Bldg., San Francisco.

INTERIOR DECORATORS
- Beach-Robinson Co., 239 Geary St., San Francisco.
- Sonnenschein Bros., 470 Sutter St., San Francisco.
- F. A. Taylor & Co., 251 Post St., San Francisco.
- The Tormey Co., 1042 Larkin St., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

KITCHEN CABINETS
Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

KITCHEN EQUIPMENT
James A. Nelson, 517-19 Sixth street, San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, Call-Post Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
Jas. F. Smith, 273 Minna St., San Francisco.

LATHING MATERIAL
Pacific Materials Co., 525 Market St., San Francisco.
Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LOCKERS—STEEL
George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
California Redwood Association, 216 Pine St., San Francisco.
Dudfield Lumber Co., Palo Alto, Cal.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Sunset Lumber Company, First and Oak Sts., San Francisco.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

METAL DOORS AND WINDOWS
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 330 Tenth St., San Francisco.

MILL WORK
Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.

OIL BURNERS
American Standard Oil Burner Company, Berkeley.
Fess System Co., 220 Natoma St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
G. E. Witt Co., 862 Howard St., San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

OFFICE EQUIPMENT
Western Office Equipment Co., 467 Market St., San Francisco.
F. W. Wentworth & Co., 539 Market St., San Francisco.

ORNAMENTAL IRON AND BRONZE
California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

OVERHEAD CARRYING SYSTEMS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- The Paraffine Companies, Inc., 34 First St., San cisco.
- Anti-Rust Coatings. The Glidden Co., 123 Hooper St., San Francisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Wadsworth, Howland Co., makers of Bay State Brick and Cement Coating, Boston, Mass. Hambley & Son, Distributors in San Francisco and Los Angeles.

PAINTING, TINTING, ETC.
- I. R. Kissel, 1747 Sacramento St., San Francisco.
- D. Zelinsky & Sons, San Francisco and Los Angeles.
- The Tormey Co., 681 Geary St., San Francisco.
- Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
- California Paint Company (see advertisement above).
- Magner Bros., 414-424 Ninth St., San Francisco.
- Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
- The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
- The Glidden Company of California, 123 Hooper St., San Francisco.
- R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
- W. P. Fuller & Co., all principal Coast cities.
- "Satinette." Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER
- White Bros., Fifth and Brannan Sts., San Francisco.

PARTITIONS—FOLDING AND ROLLING
- J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PAVING BRICK
- California Brick Company, Niles, Cal.

PENCILS
- Eberhard Faber, Monadnock Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
- Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE—VITRIFIED SALT GLAZED TERRA-COTTA
- Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS
- The Paraffine Companies, Inc., 34 First St., San Francisco.

PLASTER CONTRACTORS
- A. Knowles, Call-Post Bldg., San Francisco.
- MacGruer & Simpson, 540 Call-Post Bldg., San Francisco.
- James F. Smith, 273 Minna St., San Francisco.

PLUMBING CONTRACTORS
- Alex Coleman, 706 Ellis St., San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- A. Lettich, 365 Fell St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
- California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
- Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
- Crane Co., San Francisco, Oakland, Los Angeles.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
- H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
- Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
- Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- Wm. F. Wilson Co., 328 Mason St., San Francisco.
- Whale-bone-ite Fixtures, sold by E. C. Whalen, 325 Monadnock Bldg., San Francisco.

POWER TRANSMITTING MACHINERY
- Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.
- P. H. Reardon, 57 First St., San Francisco.

PUMPS
- Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
- Dow-Herriman Company, 140 Howard St., San Francisco; factory, Petaluma.
- Simonds Machinery Co., 117 New Montgomery St., San Francisco.
- Ocean Shore Iron Works, 558 Eighth St., San Francisco.
- Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
- Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Dow-Herriman Co., 140 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

REFRIGERATORS
- McCray Refrigerator Company, San Francisco office, Monadnock Bldg.

REVERSIBLE WINDOWS
- Hauser Window Company, 157 Minna St., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
- C. F. Weber & Co., 985 Market St., S. F.
- Kinnear Steel Rolling Door Co., Pacific Materials Co., 525 Market St., San Francisco.
- Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

ROOFING AND ROOFING MATERIALS
- Bender Roofing Company, Monadnock Bldg., San Francisco.
- "Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
- United Materials Co., Crossley Bldg., San Francisco.
- The Vulcanite Roofing Co., Texas and 16th Sts., San Francisco.
- H. H. Robertson Co., Hobart Bldg., San Francisco.

RUBBER TILING
- New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
- Pacific Materials Co., 525 Market St., San Francisco.

SAND
- Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
- The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
- C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
- Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
- The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK
- Jas. A. Nelson, 517 Sixth St., San Francisco.
- Power & Pike Co., 22-24 Main St., San Francisco.

SHINGLE STAINS
- Bass-Hueter Paint Company, all principal Coast cities.
- Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francicco.
- Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.
- Argonaut Shingle Stains. The Glidden Co., 123 Hooper St., San Francisco.

SKYLIGHTS
- H. H. Robertson Co., Hobart Bldg., San Francisco.
- Jas. A. Nelson, 517 Sixth St., San Francisco.

STATIONERY AND SUPPLIES
- Schwabacher-Frey Stationery Co., 609 Market St., San Francisco.

STEEL HEATING BOILERS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

STEEL TANKS, PIPE, ETC.
- Ocean Shore Iron Works, 558 Eighth St., San Francisco.
- Western Pipe & Steel Co., 444 Market St., San Francisco.

STEEL AND IRON—STRUCTURAL
- Central Iron Works, 621 Florida St., San Francisco.
- Dyer Bros., 17th and Kansas Sts., San Francisco.
- Golden Gate Iron Works, 1541 Howard St., San Francisco.
- Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
- Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- U. S. Steel Products Co., Rialto Bldg., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
- Vulcan Iron Works, San Francisco.
- Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

STEEL REINFORCING
- Badt-Falk & Co., Call-Post Bldg., San Francisco.
- Pacific Coast Steel Company, Rialto Bldg., San Francisco.
- Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Truscon Steel Co., 527 Tenth St., San Francisco.
- W. S. Wetenhall Co., 725 Second St., San Francisco.

STEEL ROLLING DOORS
- Kinnear Steel Rolling Door Co., Pacific Building Materials Co., agents, Underwood Bldg., San Francisco.
- J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles.

STEEL SASH
- Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
- "Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
- U. S. Metal Products Company, 330 Tenth St., San Francisco.

STEEL WHEELBARROWS
- Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

SUMP AND BILGE PUMPS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES
- Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.

TANKS FOR OIL, GASOLINE, KEROSENE, ETC.
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

TELEPHONE AND ELECTRIC EQUIPMENT
- Bittmann & Battee, 745 Folsom St., San Francisco.
- Direct Line Telephone Co., 320 Market St., San Francisco.

THEATER AND OPERA CHAIRS
- C. F. Weber & Co., 365 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

THERMOSTATS FOR HEAT REGULATION
Johnson Service, Rialto Bldg., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

TILE FOR ROOFING
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

TRANSMISSION MACHINERY
Meese & Gottfried Co., San Francisco, Los Angeles and Portland.
P. H. Reardon, 57 First St., San Francisco.

VACUUM CLEANERS
United Electric Company, Canton, O., manufacturers of Tuec Cleaners, sold in California by San Francisco Compressed Air Cleaning Co., Stockton and Sutter Sts., San Francisco.

VALVES—PIPES AND FITTINGS
Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
Sloane Valves, sold by E. C. Whalen, 325 Monadnock Bldg., San Francisco.
Grinnell Co., 453 Mission St., San Francisco.
O. M. Simmons Company, 58 Sutter St., San Francisco.
H. Mueller Mfg. Co., 635 Mission St., San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
California Paint Company, 1797 Twelfth St., Oakland.
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.
The Glidden Company, 123 Hooper St., San Francisco.
Standard Varnish Works, 55 Stevenson St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VENTILATORS
H. H. Robertson Co., Hobart Bldg., San Francisco.
Power & Pike Co., 22-24 Main St., San Francisco.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.

WALL BEDS, SEATS, ETC.
American Automatic Lock & Lift Co., 72 Fremont St., San Francisco. (Display at 77 O'Farrell street.)
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.
"Liberty" Wall Board, manufactured by Key-Hold Plaster Lath Co., 148 Hooper St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Bay State Brick & Cement Coating, manufactured by Wadsworth, Howland Co., Boston; Hambley & Son., Distributors for Northern and Southern California.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE CEMENT
"Atlas White," see coast agencies, page 127.
"Medusa White," sold by Pacific Materials Co., Underwood Bldg., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass-Hueter Paint Co. All principal Coast cities.
Velvet White Enamel. The Glidden Company, 123 Hooper St., San Francisco.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOWS, REVERSIBLE, CASEMENT, ETC.
Hauser Window Co., 157 Minna St., San Francisco.
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Clinton Wire Lath, sold by L. O. Norris, 140 Townsend St., San Francisco.

WIRE FENCE
Standard Fence, 310 12th St., Oakland.

WOOD MANTELS
Fink & Schindler, 218 13th St., San Francisco.
Mangrum & Otter, 827 Mission St., San Francisco.

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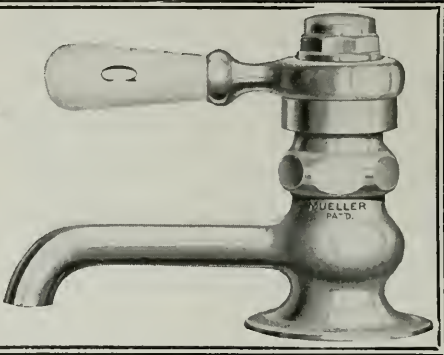


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A. McMillan & Company, Portland, Oregon.
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**Federal Telephone and Telegraph Co.,** Magneto and Common Battery Telephones—Wireless Apparatus.
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**Schwarze Electric Co.** — Bells and Horns.
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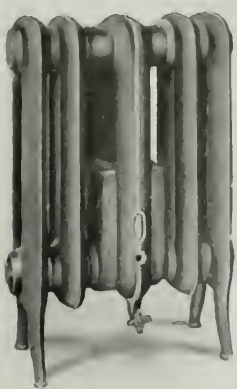

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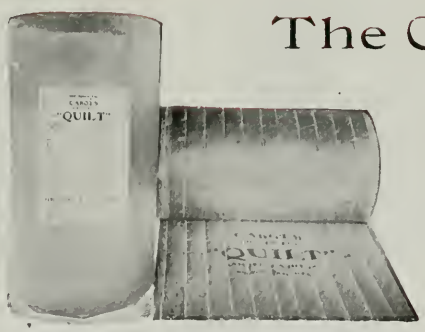


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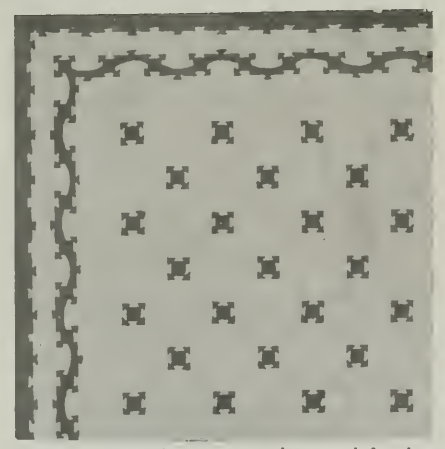

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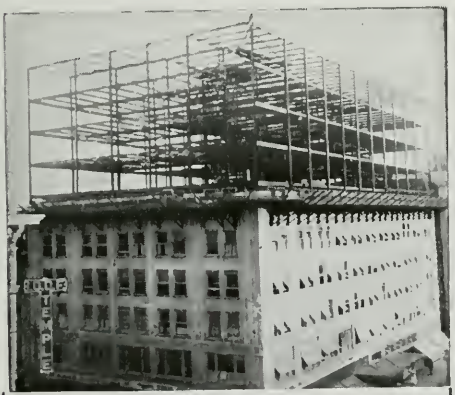

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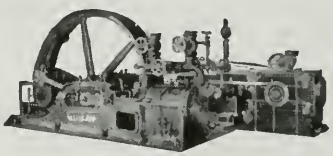

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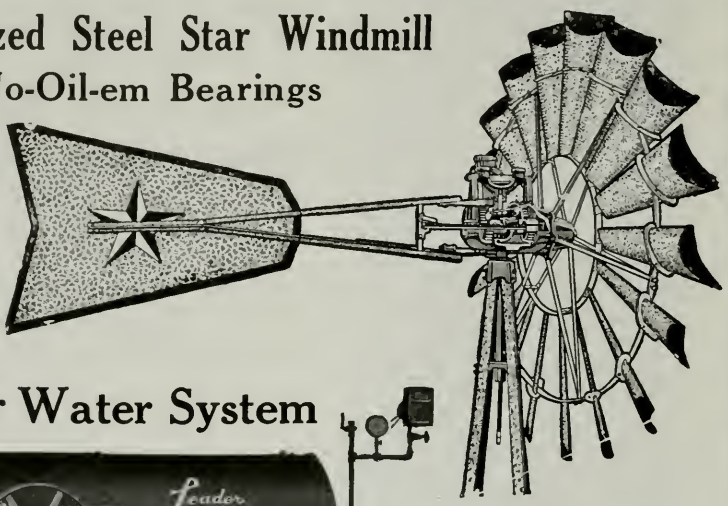

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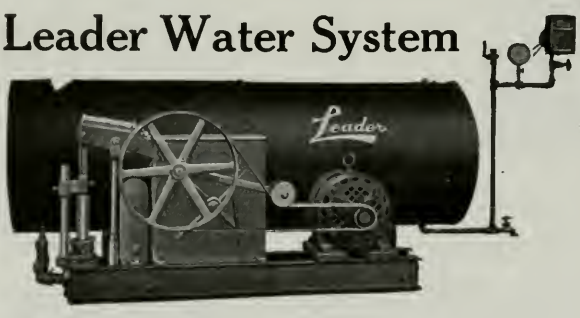


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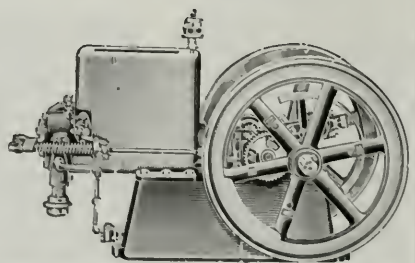

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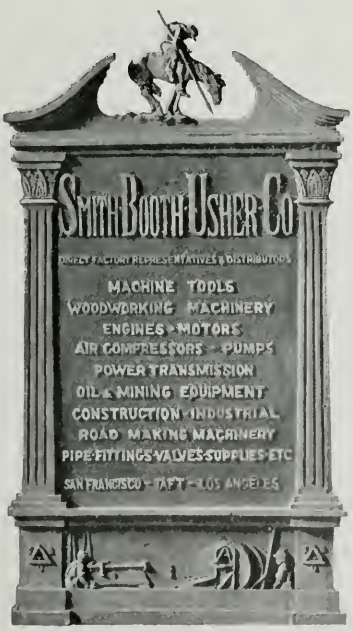


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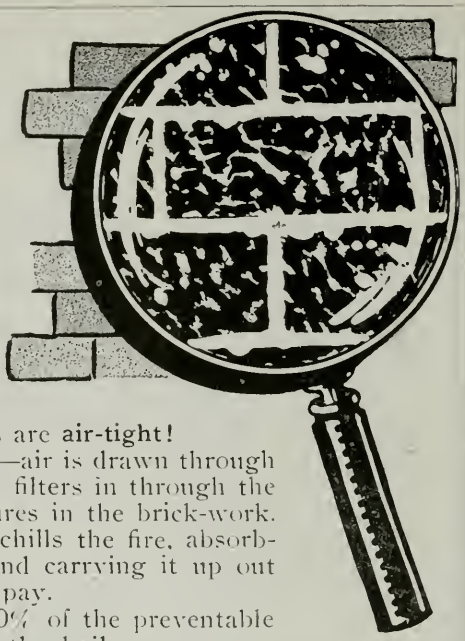

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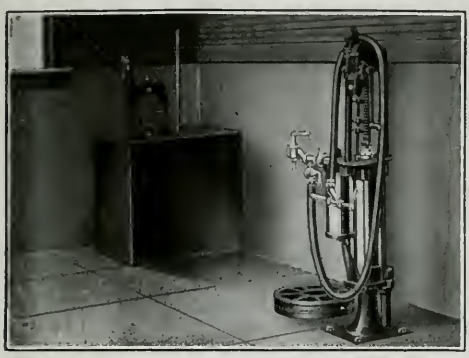

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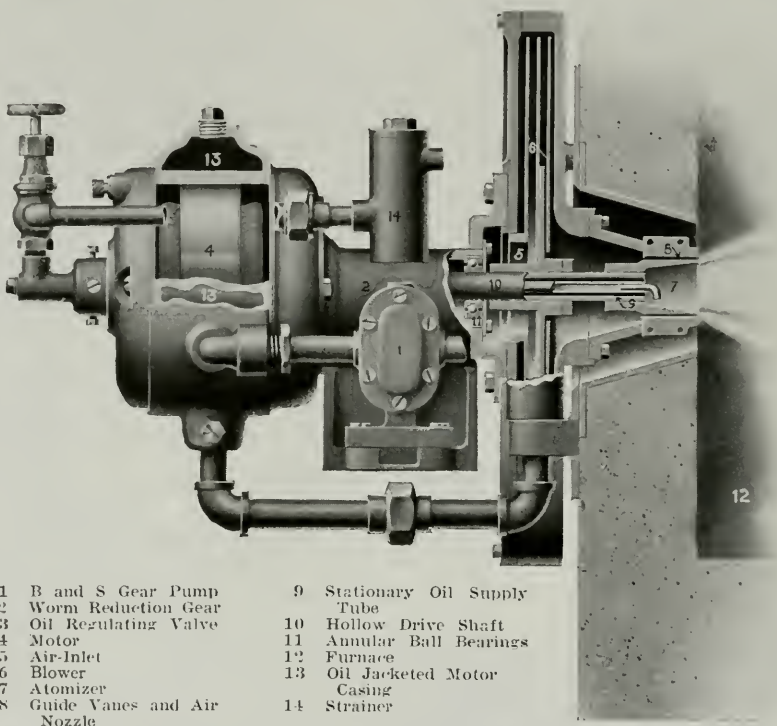


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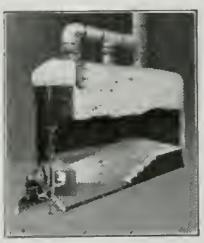

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# The Architect and Engineer

Volume LX. Incorporated Number 3.

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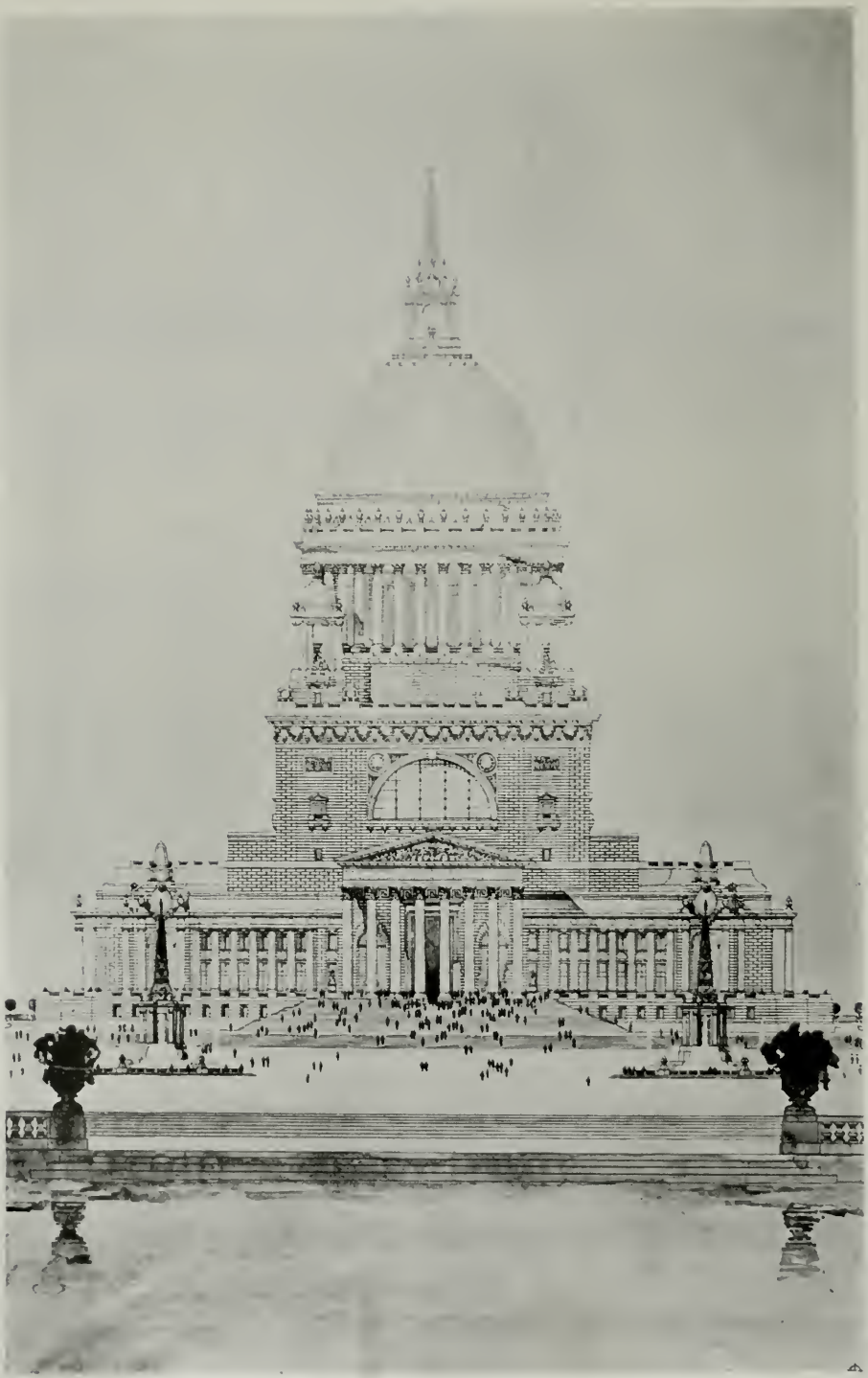


ELEVATION — TWELFTH PARIS PRIZE, FINAL COMPETITION—WINNING DESIGN BY E. E. WEIHE ATELIER ARTHUR BROWN, JR., S. F. A. C.

THE
ARCHITECT
AND
ENGINEER

MARCH, 1920 Vol. LX. No. 3.

# The Paris Prize Competition for 1919— Winning Design by Ernest E. Weihe

By ARTHUR BROWN, Jr.

THE announcement in November that the Paris Prize of the Beaux-Arts Institute for 1919 had been awarded to Mr. Ernest Weihe of San Francisco was the source of great satisfaction to his many friends and to Californians in general. The Paris Prize is perhaps the most sought after of all the American architectural scholarships and is an academic honor of first magnitude. This is the first time that the Prize has gone to a San Franciscan, and it comes as a great encouragement to the educational effort in this region.

The subject of the competition for 1919 was "A Capitol Building for the League of Nations", the detailed program for which is appended.

The illustrations of Mr. Weihe's conception show very plainly the architectural features of the composition. The provisions of the program are clearly indicated, which is a very important point in academic exercises of this nature. The scheme adopted by Mr. Weihe is logical and straightforward, and gives an opportunity for the free development of monumental features. In fact, the projet is conceived in the grand manner with a laudable disdain of the trivial. Grouping of masses, silhouette, contrast, scale, imposing proportions and logical balancing of the elements of design have been the author's chief preoccupation. Wide ranges of steps, strong basements, noble porticoes, careful fenestration and broad wall surfaces are used with admirable plastic skill to give interest and value to the dominating cupola.

In the interior, the arched rotunda, a sort of covered forum, with imposing stairways and surrounding galleries, serves to unite the assembly

* Mr. Weihe has just been placed second in the Warren Prize Competition, but will receive the First Prize on account of the disqualification of the competitor placed first.

rooms and dependencies into a monumental whole. A comparison of the drawings with the program will show how squarely and accurately the requirements of the problem have been fulfilled with no effort to avoid the issue in any detail. The program expressly recommends the addition of such features as would contribute to the beauty and character of the building. Mr. Weihe has had the very fine inspiration of adopting the dome motif as his dominating principle.

The drawings themselves are a beautiful piece of draftsmanship, free from tricks of rendering.

Mr. Weihe is to be congratulated upon his masterly handling of a problem requiring breadth of vision, artistic imagination and a strict observance of the conditions of the program.

Following is a list of the winners and donors of previous years:

| Year | Winner | Donor |
|---|---|---|
| 1904 | George A. Licht | Members of the Society |
| 1905 | John Wynkoop | Andrew Carnegie |
| 1906 | Frederick C. Hirons | J. Pierpont Morgan |
| 1907 | W. S. Wagner | A. D. Juilliard |
| 1908 | William VanAlen | *Paris Prize Committee, Inc. |
| 1909 | M. J. Schiavoni | Lloyd Warren |
| 1910 | A. F. Adams | Robert Bacon |
| 1911 | D. D. Ellington | William A. Read |
| 1912 | D. M. Kirkpatrick | Edward S. Harkness |
| 1913 | Grant M. Simon | Mr. & Mrs. William Emerson |
| 1914 | Harry Sternfeld | *Paris Prize Committee, Inc. |
| 1919 | Ernest E. Weihe | *Paris Prize Committee, Inc. |

The National Competitions for the Paris Prize are organized for the purpose of choosing a scholar to pursue his studies in the First Class of the Ecole des Beaux-Arts of Paris, according to the regulations adopted by the French Ministry of Public Instruction and Fine Arts. If the winner of the Final Competition is unable to qualify according to these regulations, to the satisfaction of the Annual Committee on the Paris Prize of the Society of Beaux-Arts Architects within six months after the judgment of the Final Competition, then the Prize may be allowed to lapse for the present season.

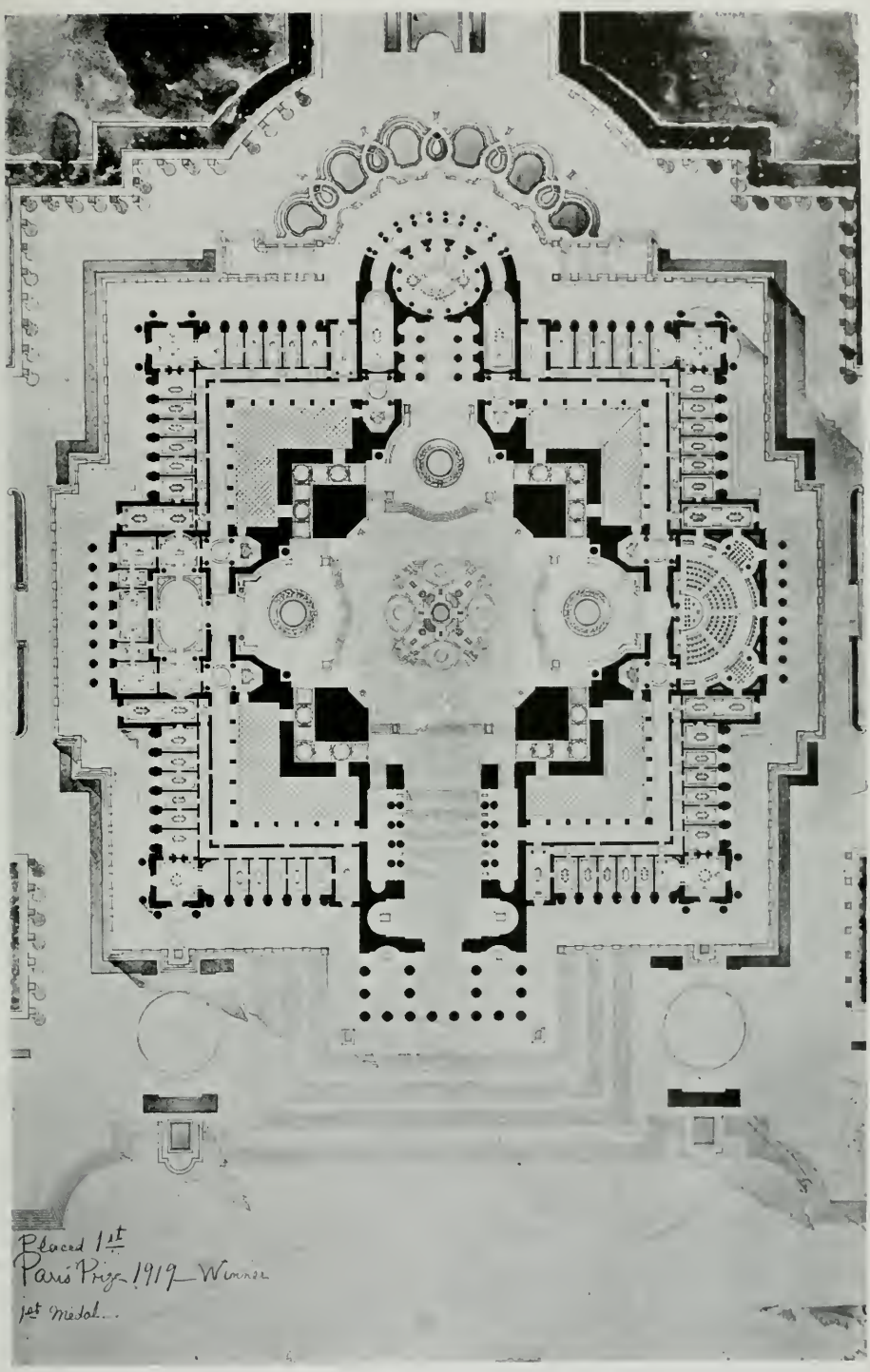
The Paris Prize scholar will receive $300 quarterly for two years and a half, dating from his arrival in Europe, which should be as soon after the final judgment as the Paris Prize Committee shall direct. He must, during the first two years after his arrival in Europe, render at least eight regular projets in the First Class of the Ecole des Beaux-Arts, exclusive of the special concours for prizes, besides doing other work which the Society will later specify, and shall spend at least two and a half years abroad. He must not, while receiving the stipend attached to the Prize, seek paid employment in any capacity anywhere without special written permission from the Chairman of the Committee.

### Program for 1919

The Paris Prize Committee proposes as subject of this competition: "The Capitol Building of the League of Nations."

The unique, common, fervent determination of those nations who have suffered profoundly by the war, of these peoples who have been brought into contact with

* Endowed by: Mrs. Robert Goelet, Mrs. Harry Payne Whitney, Mrs. Richard T. Auchmuty, William K. Vanderbilt, Alexander S. Cochran.




PLAN — TWELFTH PARIS PRIZE, FINAL COMPETITION—WINNING DESIGN BY E. E. WEIHE ATELIER ARTHUR BROWN, JR., S. F. A. C.

its realities, is that the sacrifices, the lives of the dead and the sufferings of the living shall not go for naught. That the victory shall not be an empty triumph of arms—of force over force. No indemnity can pay for its cost: no reparation can be made for its anguish. These can be justified only by the birth of some new order of events which shall sanctify them as the final sacrifices for Peace. The present generation may not hope to recover from its special and economic wounds, but from its sufferings shall arise a new ideal for the protection of the future.

It is this determination which has given being to the League of the Nations.

The Committee proposes as the problem of this first after-war Paris Prize the architectural expression of this ideal, as it would be exemplified in a building which shall be the Capitol of this League.

For the purposes of the program, it is to be supposed that the League in its final operative form consists of:

An Executive Council of nine members; one appointed by each of the five great Nations, and four elected by the Assembly of Delegates. In the Executive Council is vested the supreme executive authority of the League. It meets at frequent intervals, and is analogous in its functions to the English Cabinet or the President and his Cabinet in our Government.

An Assembly of Delegates of 150 members. Each member nation of the League appoints three delegates to this Assembly in which is vested the legislature and judicial powers of the League, subject only to certain veto rights of the Executive Council. It meets at stated intervals or on calls of the Executive Council, and is somewhat similar to our Congress, the English House of Parliament or the French Chambre des Deputies.

The Secretariat. The Secretariat is that part of the machinery of the League which has for its duties the keeping of all its records. With it are filed all treaties, agreements and records. It compiles such data and furnishes such information as it may be directed to do by the Council or Assembly. At its head is the Secretary General, a permanent official appointed by the Executive Council. He also acts as presiding officer of the Council and of the Assembly. This department would have a permanent staff of 300 or 400 members, experts and authorities besides representatives appointed by various nations to consider special subjects or Committees appointed by the Council or Assembly to investigate and report on particular branches of their legislative or judicial work. No analogy for this department is apparent in our Government. Its head, the Secretary General, is a presiding officer only without power, except as such may be delegated to him by the Council or Assembly. He in his department houses committees or conferences recording their findings and furnishing them information. He is the international clearing house for information.

This may be considered an outline of those functions which it is proposed to house in the main Capitol Building of the League of the Nations.

In conformity with the ideals which created the League a small territory similar to the District of Columbia has been internationalized, a meeting place of all nations in the common search for justice to all. It is a rolling country on an island lake. There is to be the City of the Nations with its national embassies or offices with its international bureaus or departments and its Capitol Building of the League of the Nations.

The main building only is the subject of this problem, and in it are to be housed the Executive Council, the Assembly of Delegates and the Secretariat. Below is a list of these requirements which are obligatory. This list is not intended to be inclusive of all. What additions to it, how arranged, or in what setting, is for the vision and imagination of each competitor to determine. The building houses more than a series of offices—it houses an ideal, an aspiration of mankind.

### Requirements

(a) Hall of the Executive Council.
(b) Suite of offices for each member of Executive Council.
(c) Hall of the Assembly of Delegates.
(d) Suite of offices of Secretary General.
(e) Twenty to thirty conference of committee rooms, of which two or three should be of sufficient size to admit of the presence of the public.
(f) Suites of offices for Secretariat force.
(g) Archives for 1,000,000 volumes.

The greatest dimension of the building shall not exceed 500 feet.

SECTION - TWELFTH PARIS PRIZE. FINAL COMPETITION—WINNING DESIGN BY E. E. WEHRE ATELIER ARTHUR BROWN, JR. S. F. A. C.

# War Memorials

By IRVING F. MORROW

EXPERIENCE shows that for arousing disinterested enthusiasm there is no stimulus which rivals war. It also shows that such enthusiasm, priding itself on being uncritical, can, with a little skillful manipulation, be led around into applauding its own betrayal. The conversion is accomplished by a variety of devious means, but it is clinched by two results in which wars are bound to eventuate—treaties and memorials. In ultimate significance the latter is not infrequently the more sinister. I say this with no intention of waxing facetious at the expense of much memorial design, for I am here concerned with matters more serious than aesthetic values. It is a question of the most fundamental moral and human values. Great wars, in addition to sustaining widespread enthusiasm, always stimulate an appreciable reaction against war itself as an institution. Speculation flourishes on the problem of ending war. But with the passing of the emergency such ardor quickly subsides; and the peace treaty first, and after it the inevitable memorials, play readily into the hands of the old order. Yet it is the war memorial which really shows where we stand. The outlook for a new war depends upon our attitude in looking back at the last one, and this attitude is at one and the same time symbolized and influenced by the monuments we have erected to it. Architectural aesthetics are in this connection irrelevant. It is a social question. As long as we conceive our war memorials in arrogance and dedicate them with cheers we shall have further memorials to build. That memorial which is conceived with reverence and dedicated in humility will be the last.

If to the long-suffering soldiers returned from France any query has been more frequently put than the indiscreet, "What do you think of the French girls?" it is the stupid, "Well, I suppose you had *some* experience, didn't you?" Of course, they generally had "*some* experience". So did Oedipus and Orestes and Othello and Macbeth and Faust. The outlook for the future depends upon the way in which such experiences are evaluated. Had the experiences of these protagonists been recorded by newspaper reporters, the world would have drawn small profit from their contemplation. Aeschylus and Sophocles and Shakespeare and Goethe have erected significant monuments because they realized the anomalies of these experiences and projected them against an understanding of what a normal experience should be. The experiences of our soldiers, living and dead, revealed in their true significance, would constitute solemn warnings against permitting their recurrence. But as long as the thing which most interests us in their experience is the accent on the *some*, we shall never get beyond dedicating Corinthian columns to the next war.

The recent war was heralded as a war to end war. A few people who realized the essential fallacy of such a proposition and had the temerity to say so received public obloquy, if not prison, for their pains. It is impossible to enter upon a discussion of this question now and here. The important point is that it was popularly believed that this war would be the last one, and much of the impetus towards its waging sprang from the hope thus aroused. The hour of triumph is an inopportune time to draw calm distinctions between victory and success. Yet the period which has elapsed should be enough to disturb a too easy confidence in the validity of enforcing American ideals by Prussian methods. The disquieting thing is that so many people still imagine that because

we have administered a crushing defeat to the enemy we have accomplished our aims. In spite of unpreparedness for war we won the war; but through unpreparedness for peace we lost the peace. The war looked forward with a confident idealism; the peace looks backward with a cynical disregard for human hopes and sacrifices.

Many an architect confronted with a war memorial is doubtless setting out by debating whether it shall be the Doric or Ionic or Corinthian order, as the foremost matter to be settled. The first and most vital question for decision is what we are going to commemorate. And we are faced by the necessity of an unequivocal decision. Shall it be the war or the peace? If it be the latter, we have only to turn the pages of the Fragments Antiques until we hit upon an example which can be cut to come within the price. If the former, we shall be required to satisfy the new spirit of a changed social problem. This means to turn our backs on the facility and arrogance of precedents and seek fresh architectural solutions.

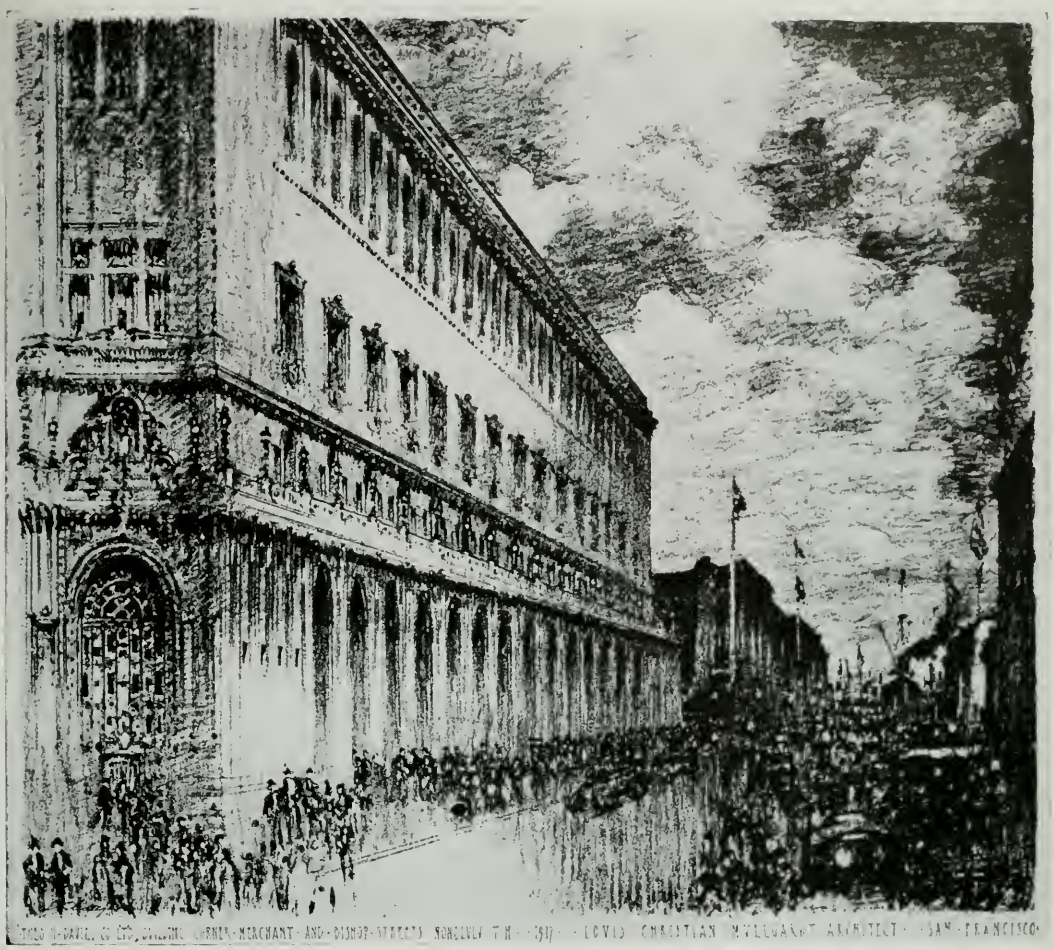
As to where our obligation lies there should be no question. We need only go back over pre-war and early war statements of aims and ideals to clear any doubt. However distasteful the task, it is necessary. Insistence upon unpleasant discrepancies between pronouncement and performance is doubtless irritating to complacency; but here is no place for complacency. In these forgotten statements will be found much about freedom and democracy (usually capitalized), the crushing of militarism and the ending of war. As I said before, it is impossible to enter here into a discussion of the contradiction between ends and means. However mistaken such a confidence may have been, the important point is that it was essentially sincere. The belief that right was to be vindicated and war ended was what inspired and sustained the popular enthusiasm for carrying on the war. Now, because politicians and diplomats have betrayed us is no reason for falling into line and cheering. Rather does it place squarely upon us the responsibility of asserting our own vigilance and energy. A peace has been made which can scarcely be covered by the guarantees of the seventh Beatitude. It is the solemn duty of the war memorials to repudiate the spirit of the peace and embody the ideals of the war. Having been denied a war which should end war memorials, we must strive for war memorials which shall do their part toward ending war.

War memorials of the past offer no precedents which are adequate, or even admissible, for our present purpose. I believe it can be said without qualification that their spirit has been universally and uniformly pernicious. They have unfalteringly glorified the specious decorative aspects of war. They have never dared to face reality. Human degradation has been discreetly masked by flaunting plumes and waving banners, and human cries drowned by the blaring of trumpets. They have known no glory save that flowering on misery. The fact that they have often assumed forms of architectural grandeur and nobility only enhances the insidiousness of their baneful influence. There is in Paris a great development which starts at the Tuileries end of the Louvre and extends along the Champs Elysées through the Place de l'Etoile and out the Avenue de la Grande Armée and its extensions seemingly as far as the eye discerns. Standing at the beginning of this axis you look through the Arc du Carrousel, past the pompous monuments of the Place de la Concorde, down vanishing lines of trees and through the triumphal Arc de l'Etoile to the country and sky beyond. Architecturally it is magnificent. But

it seems to me to typify the moral and practical futility of a discredited conception of glory. What is to arrest the indefinite continuation of arch after arch in interminable perspective, each commemorating only one more pause along an endless succession of inconclusive triumphs?

Every military activity has been conducted on the efforts and the sacrifices of the people, but their just reward has been unfailingly usurped. They have consistently toiled and suffered for their own enslavement, acquiescing in the result as decreed by fate, and never perceiving that fate is only a short name for their own acquiescence. The old order is relaxing. It is time to make an end of the glorification of conquerors and conquests. Among the first things to be scrapped is the whole pompous apparatus of military imposition. Let there be no more hymns and odes and triumphal arches and columns. The recent war has been called a people's war. This is not to say that the work of previous wars has not also been done by the people. It means in part that on this occasion unprecedented numbers of people were involved; but above all it means that the people have begun to appreciate their position. That, of course, is the beginning of the end. A break must be made with the old order at many a point. We had hoped it would be made by the treaty of peace. Since that expectation has been dashed by the statesmen, let us take the first step ourselves in the war memorials. Their influence will be still but persistent. Let us not through default allow it to lapse into the old way, but deliberately impress it into the service of the good.

Past memorials have operated as incentives to future wars. A memorial adequate to the present occasion will have to assume a new and twofold obligation. In a secondary sense it must be negative and stand as a solemn warning to future generations. But its primary function must be the positive service of the people, those who made possible the conduct of this war, as well as those to come whom we desire to spare such disastrous and futile sacrifices. Inert masses of masonry fall short at once of the opportunities and the requirements before us. As it was a people's war, so let it be a people's memorial. This means that it shall embody the ideals and minister to the needs of the community, and in particular that portion of the community most intimately identified with the war's prosecution. Into this task, as I have said, went ideals which were sound, and have remained so, unswerved by the appeals of official sophistries. The essential motive is still what it then was—the usefulness of the individual to the community. Let the memorial, then, bother with no idle obeisances to a glory which is coming to be exposed in all its hollowness and iniquity. Let it not even limit its scope to the commemoration of the dead. However sincerely and reverently their memory must and will be served, the living remain. No service is more vital or of a higher usefulness than that dedicated to their fullest well-being and happiness. What other object, in fact, is worthy and adequate as the ultimate motive of all social activity? The memorial must be unencumbered by entanglements with the petty forces whose blindness has led us astray. It must actively associate itself with whatever is creative and progressive. Nothing short of the most complete humanity is worthy as an aim; only the broadest vision is adequate as a means. The problem before mankind is to bring life out of death. The diplomats have tried their turn, and have failed. But it is the artists who are the true creators. Their supreme opportunity is at hand.



PRELIMINARY PERSPECTIVE OF BUILDING FOR THEO. H. DAVIES & CO., LTD., HONOLULU, T. H.
Louis Christian Mullgardt, Architect.

## Building for Theo. H. Davies & Co., Honolulu, T. H.

READERS will recall that some time back (December, 1917) The Architect and Engineer published preliminary drawings of a highly interesting Commercial Center which Mr. Mullgardt had designed for Honolulu. It is interesting to know that this project is now actually being realized. The first part of the group to be undertaken is the building for Messrs. Theo. H. Davies & Co., Ltd. Drawings for this structure were made during 1918, but the beginning of construction was postponed by the impossibility of building during the war. With the resumption of building operations, however, contracts were let at the first opportunity, and construction is now in progress.

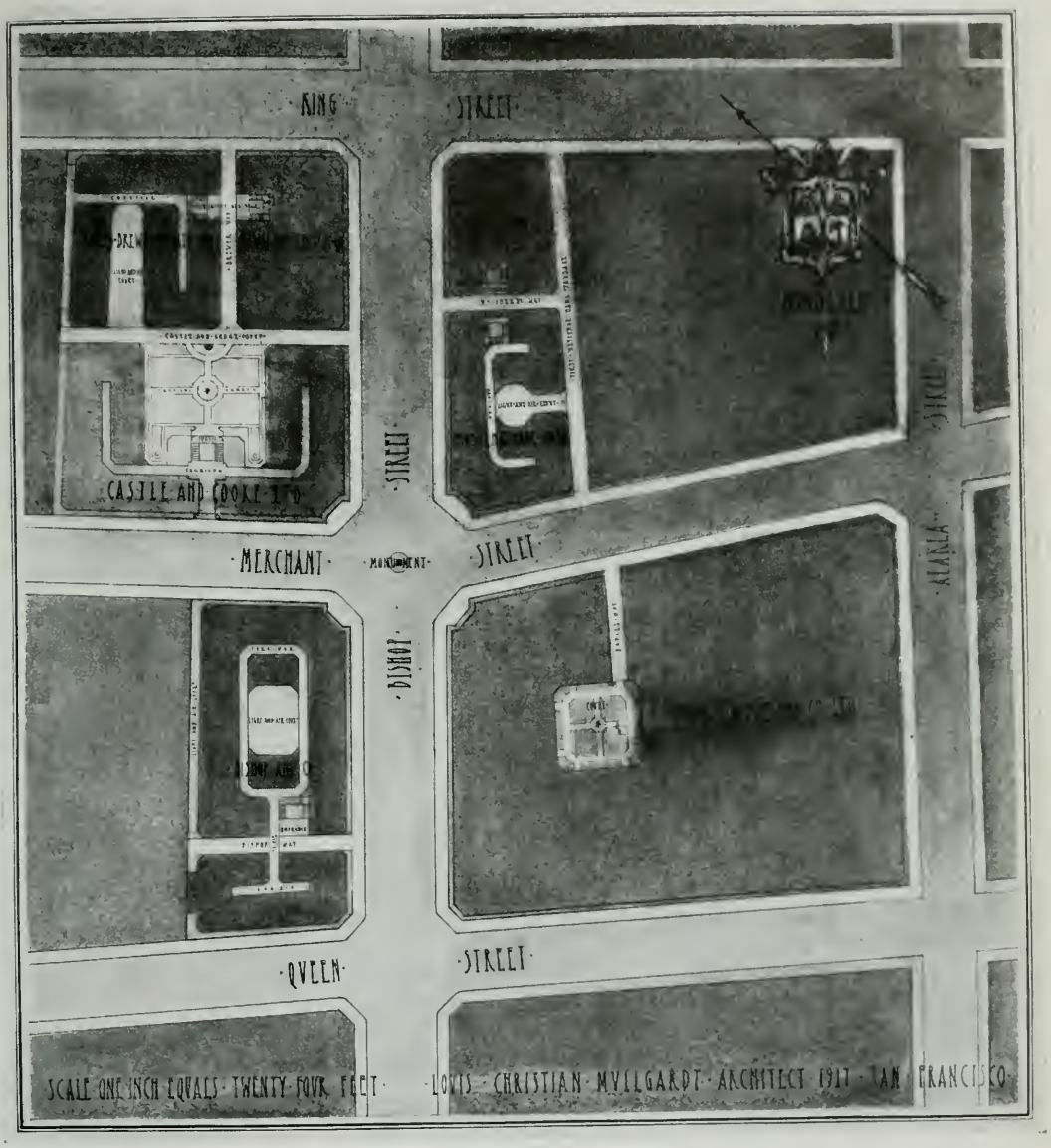
The building is devoted solely to the uses of Theo. H. Davies & Co. and their personnel. The business is a wholesale one, embracing branches of

dry goods, hardware, and grocery, as well as extensive shipping and accounting departments. The building covers the entire block bounded by Bishop, Merchant, Alakea, and Queen streets, to the height of four stories. An open arcade runs the length of the Bishop and Merchant street facades. The building is wholly fireproof. The structure is concrete, faced on all four sides with terra cotta; partitions are of hollow tile; all doors, sash, frames, etc., are metal; wire glass is used throughout. The roof is flat, paved with tile, and largely given over to the uses of the employees. The business offices are grouped around an interior court, upon which they open directly by glass doors on the ground floor. This court is designed of elements and materials similar to those of the exterior, and is to be planted as a tropical garden, with fountain, etc.

At several points the building makes departures from the current practice in commercial structures. For instance, in the matter of a basement. Construction above ground is less expensive than that below,and increases the visible mass and impressiveness of the building as well. Furthermore, space underground is less valuable than space above by reason of the lack of natural light and air. Provided, therefore, that there are contemplated no unusual loads which would necessitate excessive floor construction, a story added to the building above ground has every advantage over one placed below. In this particular case the height of the water level with reference to that of the ground would have rendered waterproofing an expensive undertaking. These considerations have all led to the entire elimination of basement. Elevator machinery, etc., is placed on the roof.

Mezzanine floors, where used, have been kept back of the facade. This allows for a better diffusion of light throughout the story, and avoids breaking the continuity of the design of the facade.

Mention might also be made of the problems arising out of the protection and the insurance of stock. Such buildings are commonly equipped with elaborate automatic sprinkler systems as a safeguard against fire. But whatever utility may be credited to a sprinkler system, these several positive objections and disadvantages were charged against it. The expense of installation is large. Because of its depth below the structural members of the ceiling, the height of the building must be increased if the amount of clearance is not to be diminished, and this adds to the cost of construction. If the sprinkler system is not to remain entirely exposed, all ceilings must be furred down under it, adding another considerable item of expense. Under the best of conditions it is unsightly. Finally, being automatic, there is the insurmountable risk of its working at the wrong time or failing to work at the right time. The inadvertent injury of a sprinkler head may lead to substantial damage by water; or even a trivial fire may be attended by extensive water loss; while a real fire, by reason of special conditions of draught, etc., may develop to considerable proportions, before fusing any of the sprinkler heads in a high ceiling. It would seem, on the other hand, that the ideal precaution against fire would consist, first, of a system of enunciators placed in and among the articles endangered; and second, in the division of the building both horizontally and vertically into a number of fire resisting compartments each of moderate extent, in any one of which



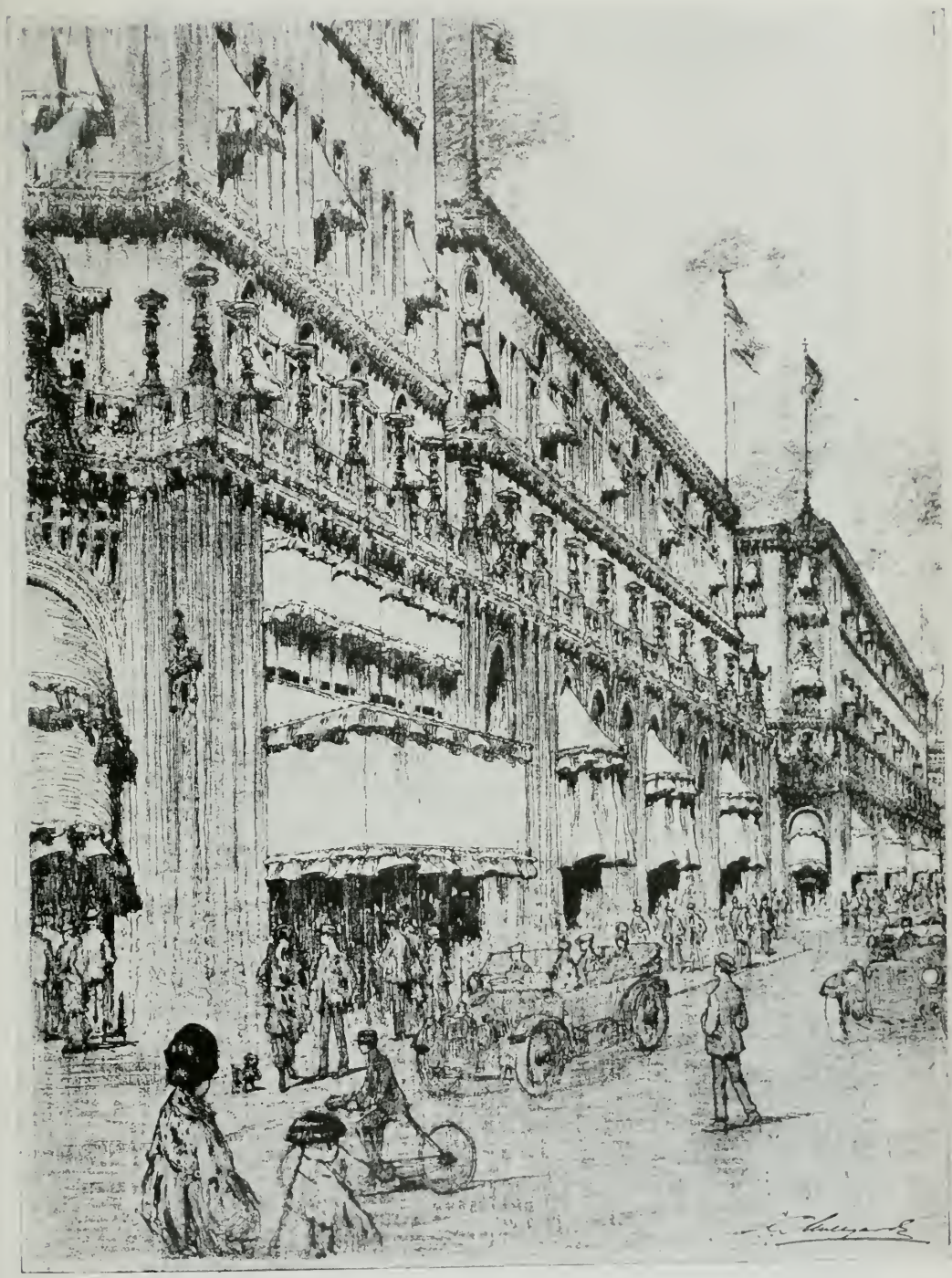

PLOT PLAN OF COMMERCIAL CENTER, HONOLULU, T. H.
LOUIS CHRISTIAN MULLGARDT, ARCHITECT
(The Davies building occupies the block bounded by Bishop, Merchant, Alakea, and Queen streets.)

a conflagration could be localized and handled by means of hose and standpipe. The expense of necessary apparatus and structure would be slight. Furthermore, barring some general calamity, it is unreasonable to suppose that fire would break out in more than one compartment, or at most two or three simultaneously; for which reason insurance on stock might be materially reduced. This matter was given thorough consideration, and the owners were convinced that, even in the face of the increased insurance rates imposed by the underwriters in the absence of a sprinkling system, the latter method of fire protection offers a substantial saving as compared with the outlay for a sprinkler system and the increased construction necessitated by it, without any increase in risk.

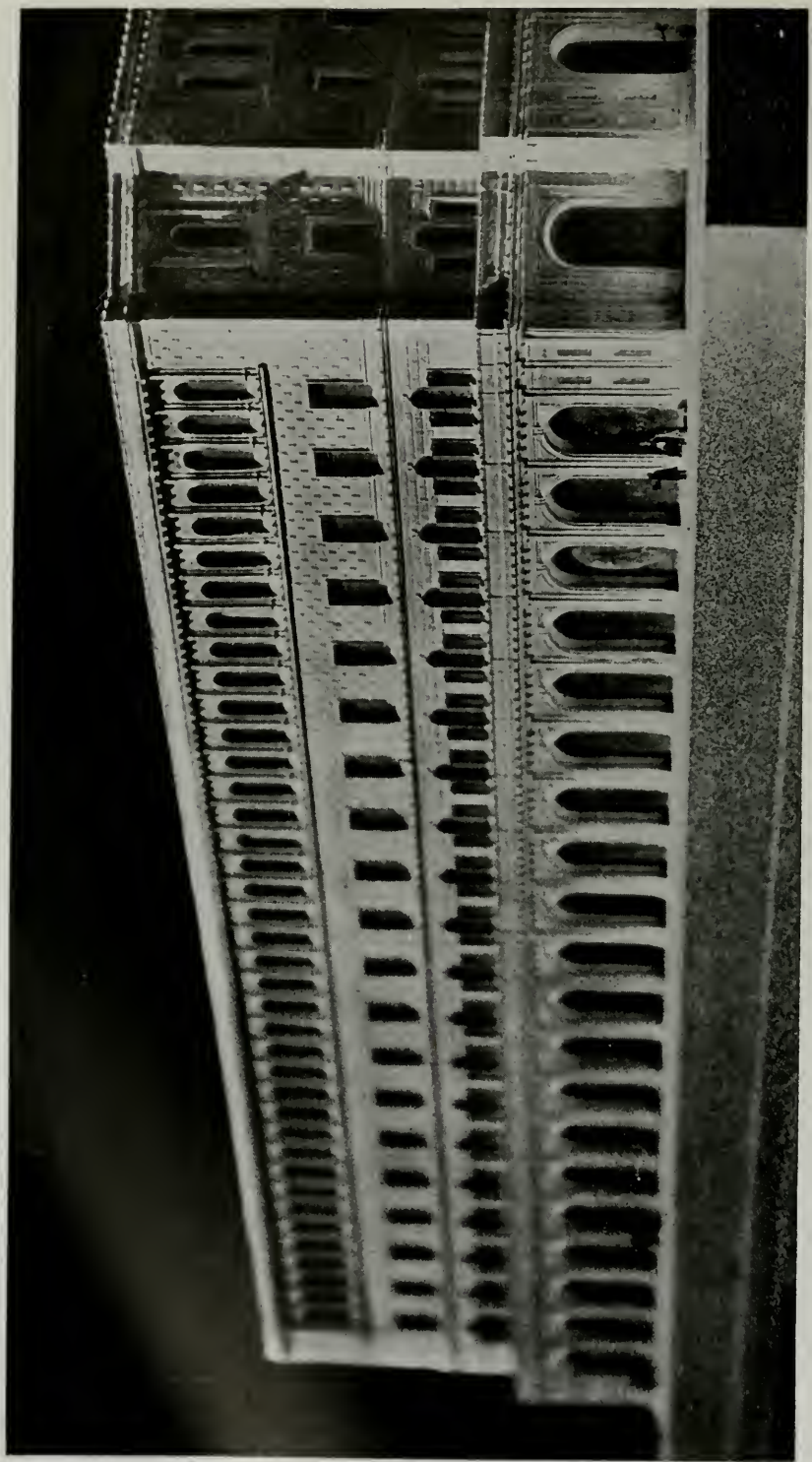
The handling of the terra cotta is an interesting innovation, or rather, like many another innovation, a return to first principles. In recent years the terra cotta industry has made conspicuous progress. Yet without attempting to deny the technical perfection attained, one must recognize that its tendency has been in a general direction contrary to the genius of the material. The ideal consciously or unconsciously set seems to have been the attainment of the conditions of stone rather than the development of the native aptitudes and resources of the material itself. With this mistaken line of development the Davies building makes a sharp break. It aims to employ terra cotta as the plastic and fired material it really is. It eschews a striving for effects which, although often to a large degree technically attainable, are at variance with the genius of the material, and attempts to take the fullest advantage of every peculiarity of the material which contains native decorative possibilities. There is an avoidance of long, straight lines and large plane surfaces. All such practical devices as joint covers, etc., have been impressed into the service of the decorative design. The result is a building of an unusual degree of richness and life, yet practically devoid of anything in the nature of applied ornament, properly speaking. The spirit thus aimed at is further enforced by two interesting and logical technical expedients. The grinding of joints is eliminated, the inequalities due to firing being taken up in the mortar; and the glaze is carried not only over the front face of the block, but around into the reveal of the joint as well. The color is a warm, soft brown or buff, in effect monochrome, but actually worked out with a large degree of tone variation around the key color.

The photographs printed are from a quarter-inch scale plaster model. It should be pointed out that the nearness of the camera to the brilliantly lighted surfaces has produced a marked exaggeration in the relief, resulting in an appearance of excessive scintillation, not to say unrest, which will most certainly not appear in the completed building. In fact, to those who have studied the drawings and had an opportunity to see the model, the most patent characteristic of the building is its breadth. All detail is so placed and scaled that the result is rich, warm, but essentially simple. More than anything we have seen in a long time from Mr. Mullgardt, or from any other of our architects for that matter, its spirit takes one back to the calm and confident bigness of the palaces of the Roman Renaissance.

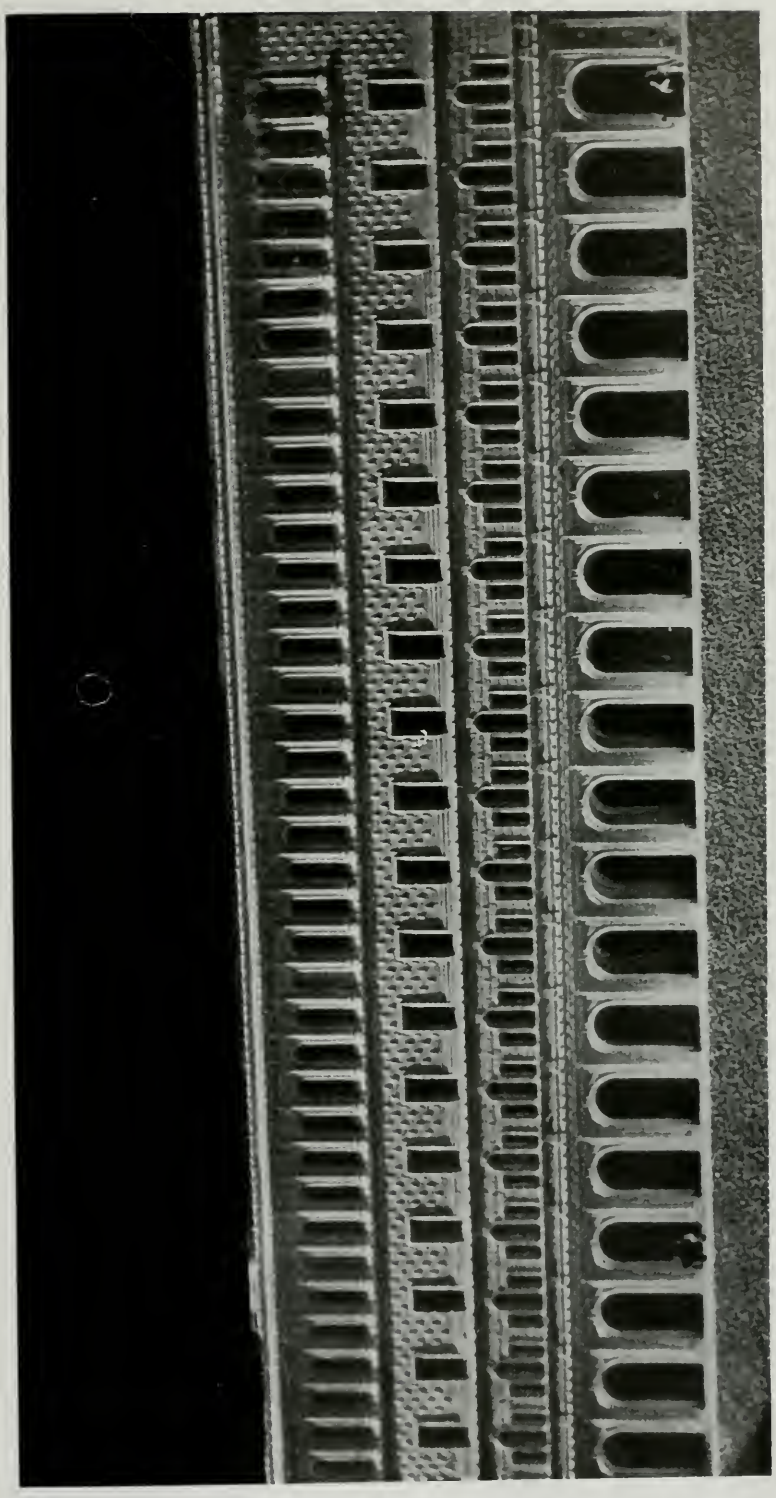
I. F. M.



PRELIMINARY PERSPECTIVE OF COMMERCIAL CENTER HONOLULU, T. H. LOUIS CHRISTIAN MULLGARDT, ARCHITECT
(Looking down Bishop street, showing Davies building in the distance.)

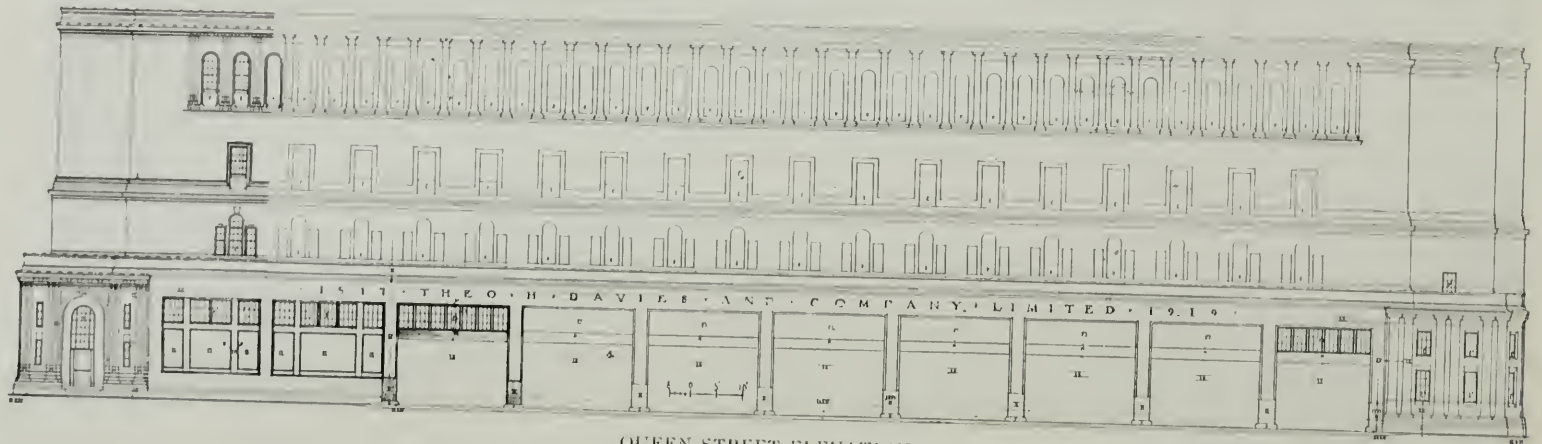


BUILDING FOR THEO. H. DAVIES & CO., LTD., HONOLULU, T. H. PHOTOGRAPH OF MODEL
LOUIS CHRISTIAN MULLGARDT, ARCHITECT

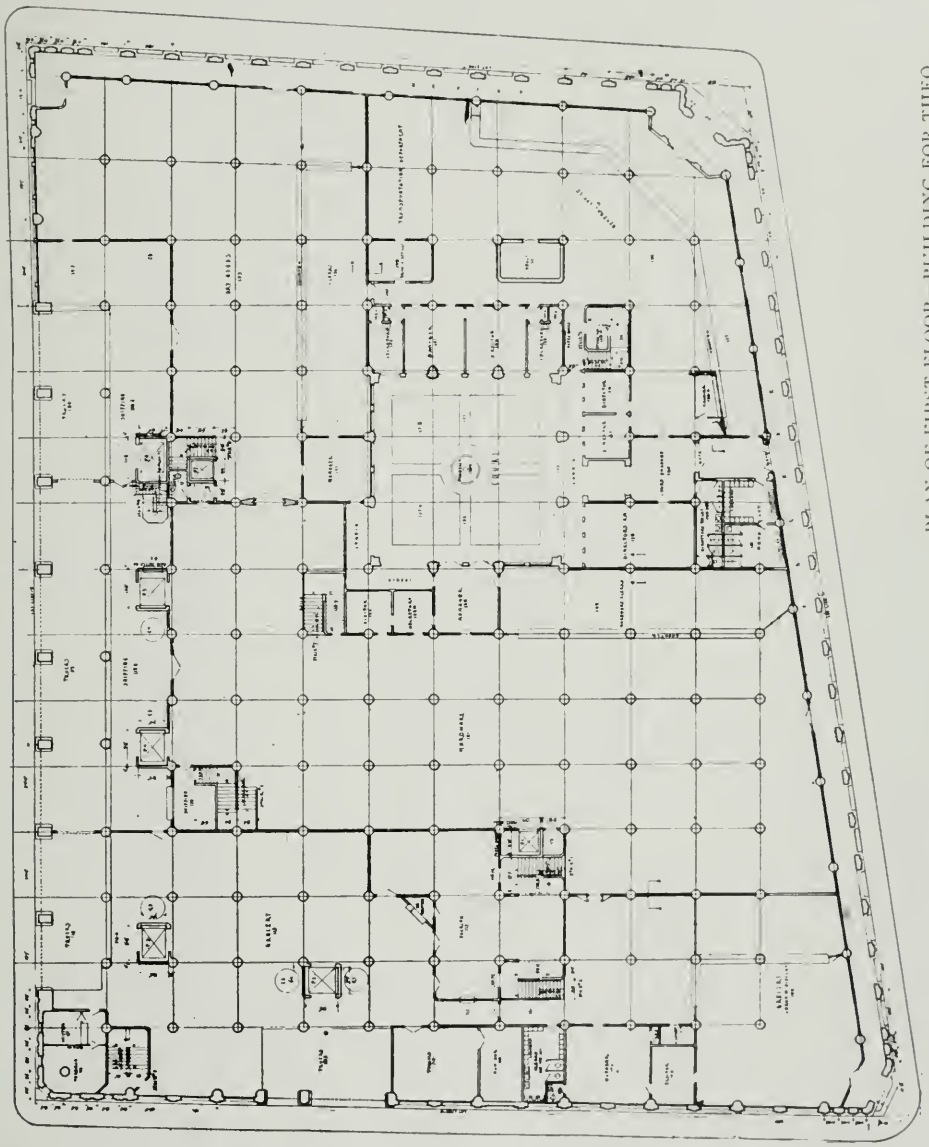


BUILDING FOR THEO. H. DAVIES & CO., LTD., HONOLULU, T. H. PHOTOGRAPH OF MODEL
LOUIS CHRISTIAN MULLGARDT, ARCHITECT

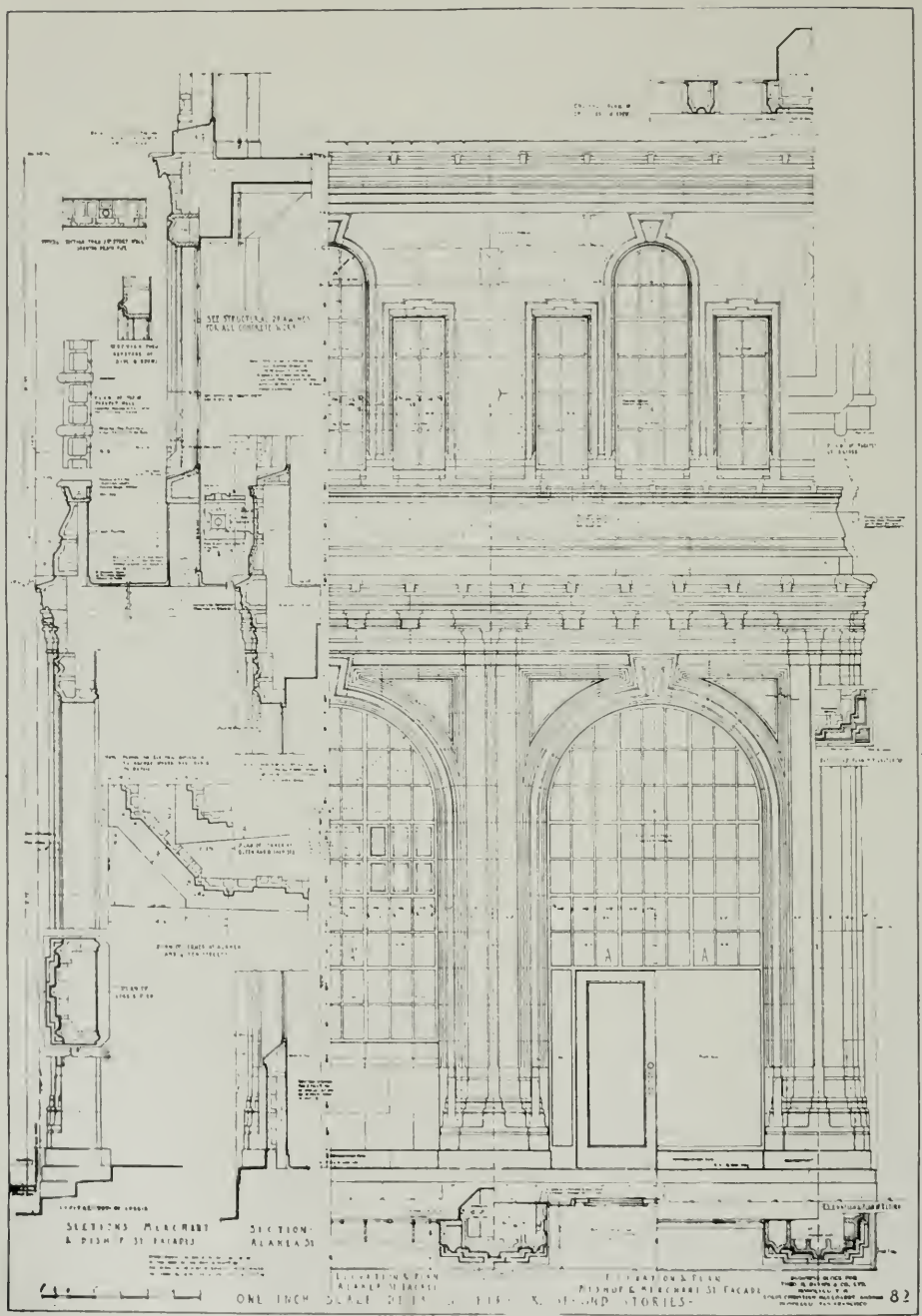
ALAKEA STREET ELEVATION



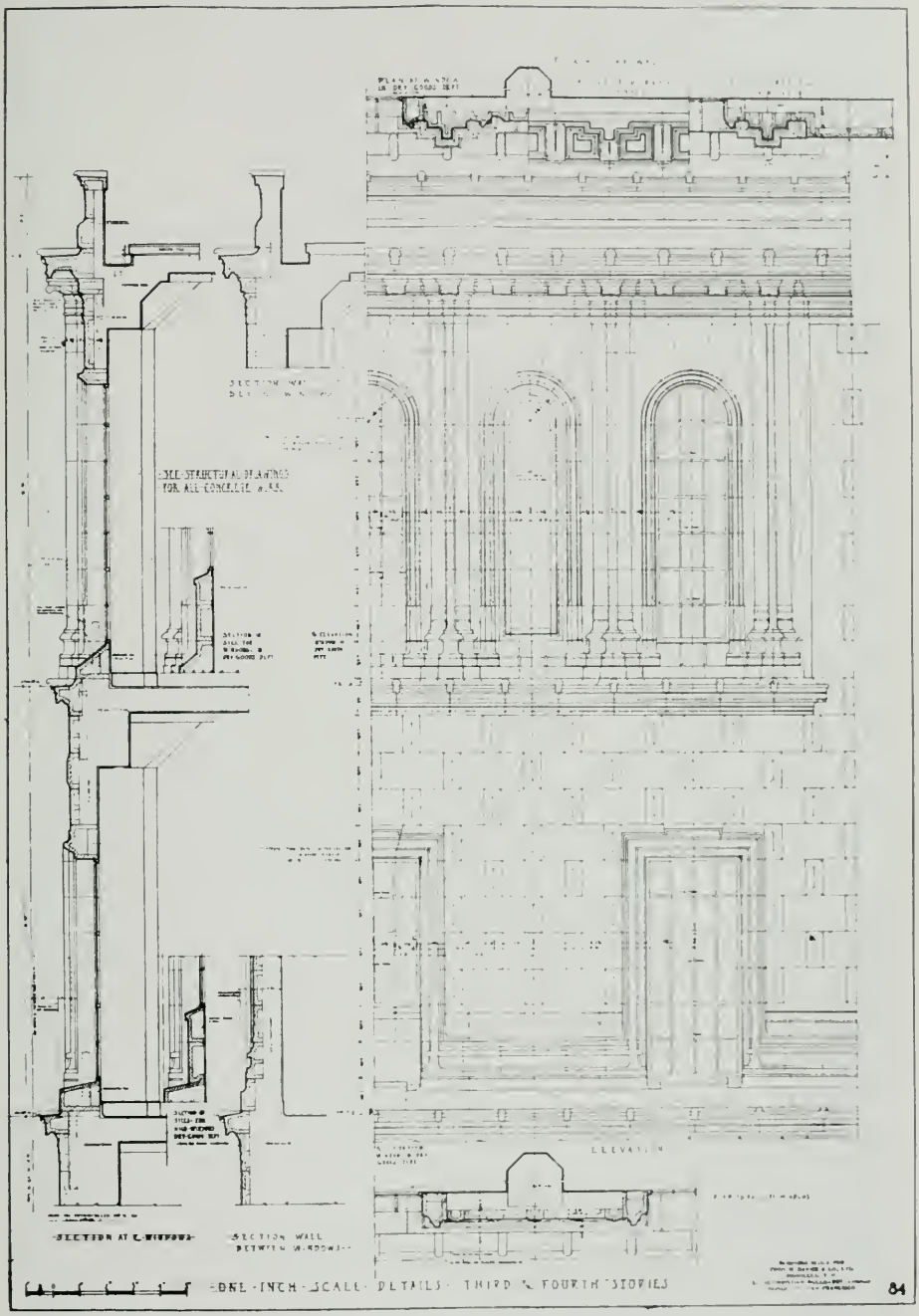

QUEEN STREET ELEVATION
BUILDING FOR THEO. H. DAVIES & CO., LTD., HONOLULU, T. H.
Louis Christian Mullgardt, Architect.



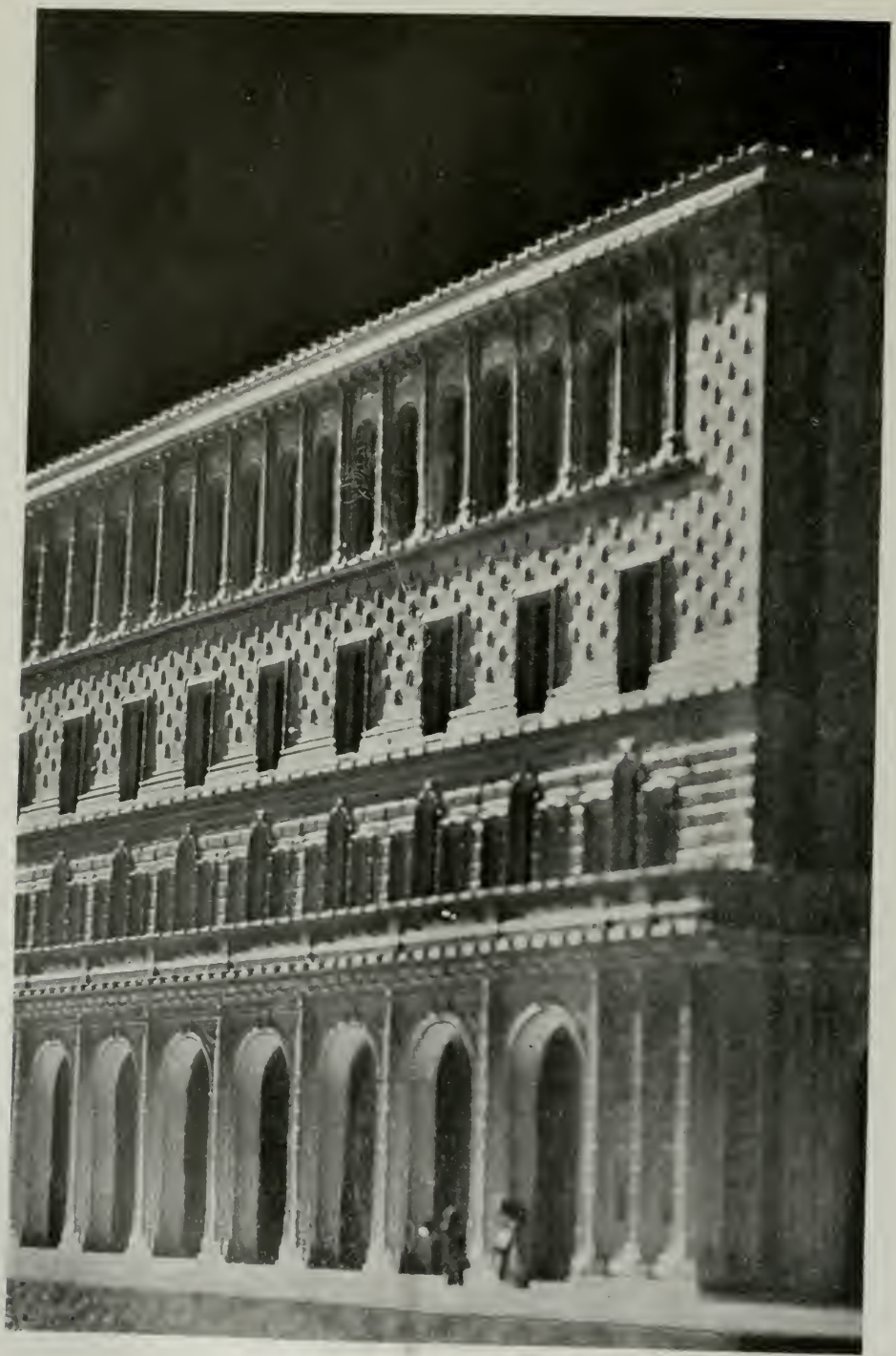
PLAN OF FIRST FLOOR—BUILDING FOR THEO. H. DAVIES & CO., LTD., HONOLULU, T. H. LOUIS CHRISTIAN MULLGARDT, ARCHITECT



DETAIL OF LOWER STORIES—BUILDING FOR THEO. H. DAVIES & CO., LTD., HONOLULU, T. H. LOUIS CHRISTIAN MULLGARDT, ARCHITECT


SEE STRUCTURAL DRAWINGS FOR ALL CONCRETE WORK
SECTION AT C. WINDOWS
SECTION WALL BETWEEN WINDOWS
ELEVATION
ONE-INCH SCALE DETAILS THIRD & FOURTH STORIES
84

DETAIL OF UPPER STORIES—BUILDING FOR THEO. H. DAVIES & CO., LTD., HONOLULU, T. H. LOUIS CHRISTIAN MULLGARDT, ARCHITECT



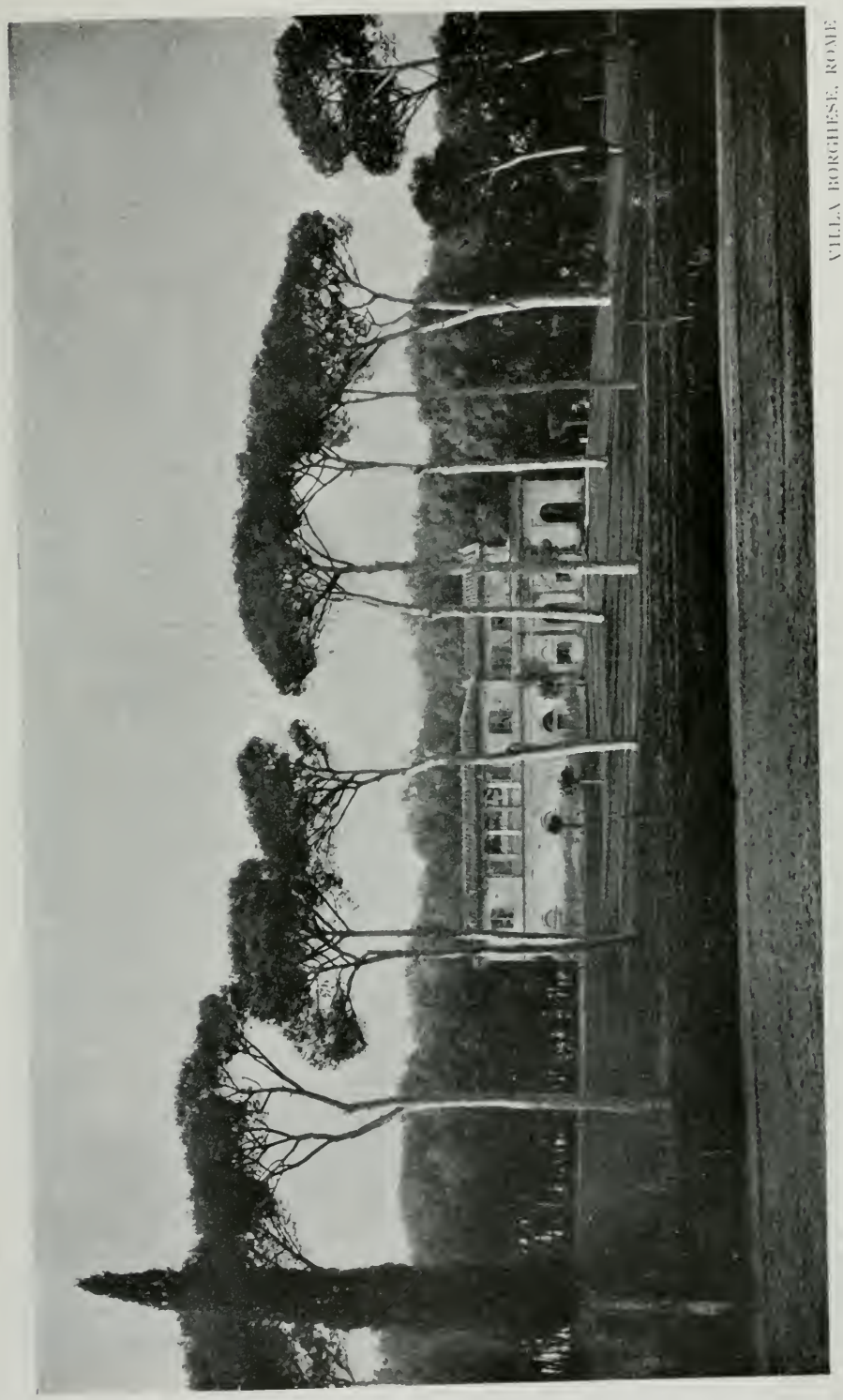
BUILDING FOR THEO. H. DAVIES & CO., LTD., HONOLULU, T. H. PHOTOGRAPH OF MODEL
LOUIS CHRISTIAN MULLGARDT, ARCHITECT

# A Collection of European Photographs

By JOHN K. BRANNER

CHATEAU AT BÈZE, COTE D'OR, FRANCE

CHURCH NEAR CHATEAU THIERRY
(Photographed by Mr. Brunner one year before its destruction by bombardment.)



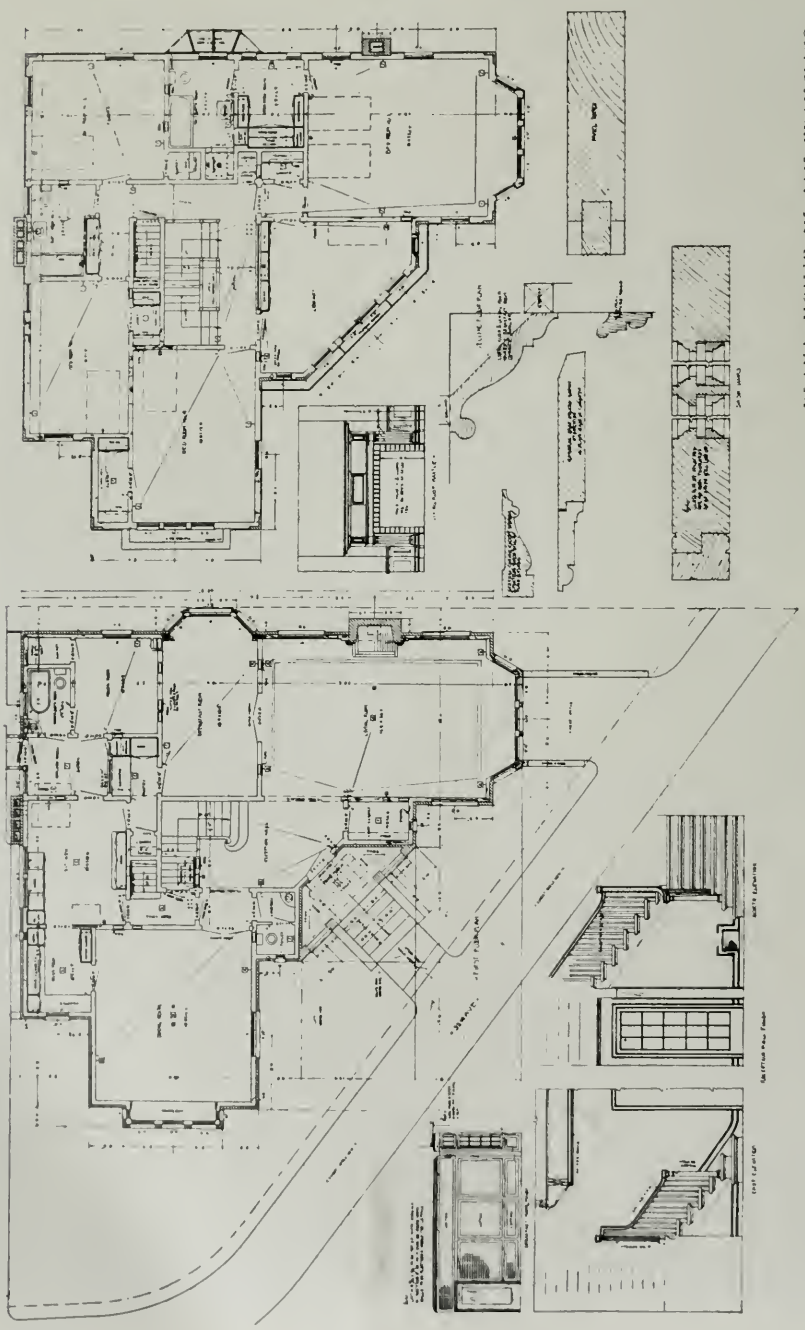
VILLA BORGHESE, ROME

CHAPEL AT CAPRI

THE GENERALIFFE, GRANADA

ISLAND OF CAPRI

# A House by Sidney B. Newsom, Architect



PLANS—HOUSE IN SAN FRANCISCO
SIDNEY B. NEWSOM, ARCHITECT

HOUSE IN SAN FRANCISCO
SIDNEY B. NEWSOM, ARCHITECT

HOUSE IN SAN FRANCISCO
SIDNEY B. NEWSOM, ARCHITECT

HOUSE IN SAN FRANCISCO
SIDNEY B. NEWSOM, ARCHITECT

HOUSE FOR MR. M. E. SPIRO, SAN FRANCISCO
S. HEIMAN, ARCHITECT

## Plumbing Club Proves Successful Experiment

THE formation of a plumbing club by the Co-Operative Apartment House Association of Los Angeles for the payment of a flat rate for the care and inspection of all plumbing proved such a successful experiment that the membership has increased in two months from twenty-five to one hundred. The original rate of payment, $5 per year for each apartment, has also been lowered to $4 per year for each apartment.

By the terms of the contract, with a local plumbing company, the latter agrees to inspect all plumbing in each house four times a year. The plumber is subject to call any time, night and day, for emergency calls, and maintains a sufficient force to enable him to answer all calls with thirty minutes as a maximum. The flat rate includes the replacement and furnishing of faucets, ball cocks, washers, flush valves, traps on sinks and basins, etc., but does not include the furnishing of plumbing fixtures, such as closet bowls, bath tubs and basins. It does include repairs to all steam, gas and water pipes in the house. Investigation has shown that there is a considerable saving in this plan, as it is figured that the average apartment house is now spending about $200 a year on plumbing bills. As the Co-Operative Apartment House Association includes about 640 houses, under the old plan, the association would spend $128,000 annually. Under the new plan, the cost per apartment house will average $125 per year, or a total of $81,000 for the 640 houses, showing a saving of $47,000 annually, if all the houses in the association become members of the club.—Building Management.

# A New Conception of the Relation of An Architect to His Draftsmen*

By GEORGE BAIN CUMMINGS

THERE was held recently in New York a limited architectural competition. The proposed building was to be of considerable size and importance; the remuneration and prestige offered to the successful competitor were quite well worth his best effort. Coming during such an unsettled period as the present, with so little new work finding its way into the offices of architects, such a commission as awaited the winner of this competition would be most welcome. There was every reason, therefore, why the competition was worth winning and, consequently, worth trying hard for.

The winning solution was a distinguished design. The most careful study was evident in the elevation, the most thoughtful consideration in the plan. It was apparent that every aspect of the problem had received scrupulous attention, and every feature of the solution evidenced deliberately weighed judgment.

The solution which seemed generally to be rated second fell measurably below the standard of the winner. A confident handling of the problem, which only the most thoughtful study and critical analysis could impart, was lacking. There was not the sure mastery of the problem that the winning solution revealed.

Shortly after the judgment and exhibition of this competition, I learned, from draftsmen employed in the offices of the architects producing respectively the two solutions discussed above, the manner in which the solution had been arrived at in each case. The comparison is of more than passing interest.

In the office in which the winning design was produced, the program was placed before the whole organization. It was studied and discussed by all, from the principles to the most junior draftsman. From this action —that of a committee of the whole—the scheme was arrived at. The various members of the force took up this scheme and worked out its details. Nothing was accepted or decided until it had been presented to the rest and subjected to their analysis, criticism and suggestion. This was a collaborative effort in which everyone in the organization bore as large a share as he was able to assume. The result was a collaborative solution, which might be expected to survive critical analysis, inasmuch as it had been produced by such an analysis on the part, not of one, but of several, trained persons.

In the other office, a different and more usual procedure had been followed. The principal and two or three others studied the program and determined the scheme. They made the initial sketches and determined the essential elements of the design and then turned the scheme into the drafting-room to be drawn up and presented. Those who worked on it had no control over the design, no opportunity to criticize or discuss it with the few who had determined it. Some of them felt that fundamental mistakes were being made in this solution of the problem, but there was no appeal. This condition chilled the enthusiasm of the organization and made the members silent, if not openly hostile, toward the solution.

* From the Journal of the American Institute of Architects.

The first office produced a winning solution, the other a losing solution. I am not attempting to prove cause and effect in this instance, although I believe that would be easy. I am simply presently facts. Furthermore, let me say that I do not insist that in such a procedure as that described do we find an infallible recipe for winning a competition. As a matter of fact, you and I are not particularly interested in the familiar type of competition. What I would have you read from the title of these notes is, that there is a big Idea, in the working out of which an architect may achieve Success. The essence of that Idea is a new conception of the relation of an architect to his draftsmen.

Your draftsmen are of two general kinds—live and dead. The dead ones are simply draftsmen—never to be more or otherwise. They are worth very little to you. They work for you by the hour at an established gait. They have no enthusiasm for the work, for your success, for their own futures. They may be round pegs in square holes, or they may be handicapped by lack of education and contact with fine things. In either or any event such a man is a poor investment for you, and is making a poor investment for himself. Study his case, urge him to get into a line of work for which he will have some enthusiasm, help him make the right connection, or strike some spark to quicken his dying soul and arouse ambition and enthusiasm in him toward the work in hand. Briefly, hire him, or fire him, but don't exploit him. Don't shake your head over him and say, "Poor fellow, he'll never be anything but a draftsman," and then continue to pay him starvation wages and reflect comfortably that if his work is not brilliant it is at least steady, and surely is cheap enough.

Of course, the majority of your draftsmen are the other kind—live ones. They are really not draftsmen at all, but architects in the making. The difference between them and you is simply one of degrees in proficiency and experience. (And sometimes the balance tips to their side!) Every once in a while one of your best men drops into your office to say that he has landed that big job or entered into a favorable partnership arrangement. And so he is added to the list of practicing architects. And you select another man to move up into the position he has vacated, and that means you have to hire another junior draftsman or a young college graduate, or promote the office boy and hire another youngster. And so they pass up through your organization. You take them in at the bottom raw and green, but eager and teachable; you graduate them finally, and compile a list of the firms you have fathered and trained. And one day your last call comes, or you retire from active work to grow old leisurely, and your head men step into your shoes and carry on the practice. Don't you see that with these live draftsmen, as it was with you, it is a progression, and that from the time the young man desides that if he is to find his immortal soul he must be an architect, he must be rated and reckoned with as an architect in the making? Are any of us in danger of ceasing to be "in the making"? May an architect cease to learn and develop, with impunity?

And so these live draftsmen of yours, these potential architects, are your professional brothers just as much as are your fellow Institute members. Your welfare and theirs are coincident. They are your brain and muscle, your strength and genius, if you will but let them be, if you will but acknowledge them. How senseless not to make the most of your investment in them; how foolish not to utilize their talent, their youthful

imagination, their spiritual fire! The architect who won the competition was wise, for he did so utilize those priceless qualities.

The unrest sweeping and rocking the world is gripping these draftsmen. We hear of unions of them forming or contemplated. They would not be in such movements if the architects generally had pursued an enlightened policy toward their employes. Even now they look to other fields of work, preferring another career to the alternatives of standardized labor or allegiance to a tottering—is that too strong a word?—at least floundering, profession.

Whether you have a competition on the boards or only a job, or six of them, sort your draftsmen into the dead and live classes, get rid of your dead ones or transform them into live ones, and them sit down at the same table with them all, and talk and think and create together. Collaborate—not because it may be the way to win a competition, but because it is the only way in which the true architectural traditions can be carried forward—and things that do not go forward go backward. Nothing stands still.

* * *

## Architect Says Rebuilt Houses Are Profitable

By CARL WARNECKE*

THE immediate demand for moderate priced and yet modern apartments in the San Francisco bay district, particularly near the industrial centers, has developed a new line of building operations that has proved successful and profitable—the remodeling of well constructed buildings of old type and transforming them into up-to-date apartments. There are quite a number of such buildings scattered through the older parts of San Francisco and Oakland, and it has proved profitable work for the owners to remodel these buildings to meet the demands of the day.

The owners of the buildings of this type have viewed with apprehension their constantly decreasing revenue with increasing depreciation, a condition recognized as due to the fact that tenants today do not merely seek, but demand, modern housing.

Steady increase in manufacturing and the general business growth of our cities is resulting in like increase of the worker and co-worker. There is an ever-growing call for two and three-room apartments by those who demand modern housing. Ordinarily it requires a considerable investment to erect an apartment house, and to the man prepared to invest only a few thousand dollars this is a seeming impossibility. A recent careful survey of a number of old residences and flats led us to believe that with a very nominal expenditure such buildings, non-producing, could readily be converted into income property, netting a most satisfactory return.

As an instance of the actual result to be obtained is cited a building of obsolete type now producing good revenues. It originally embodied but one home normally renting for $35 per month. The condition of the building was such as to make it legitimate prey for the house wrecker. Remodeling involved a cost of only $6500, yet the owner today has a modern apartment building of six suites, each comprising two or three rooms, and all exceptionally well lighted and ventilated. The owner receives a rental of $200 per month or $2400 per annum. His gross return on the investment is 36 per cent. It is of interest to note that but ninety working days were required to effect the transformation.

* Miller & Warnecke, Architects, Perry Building, Oakland.

## Light Burning Wood in California Forests

STANDING redwood trees are almost immune from forest fires and this fact necessitates a distinction between the redwood and pine forests in California in any consideration of light burning, a test of which is advocated by the California Forest Protective Association and other private associations and lumbermen for the sake of clearing the forest floor of debris and thus preventing big destructive fires. In the redwood forests slashings and underbrush occasionally cause fires hot enough to burn to the tops of redwood trees, destroying their branches and foliage but in nearly every case they put out new foliage the next season. This immunity of redwoods from fire is due partly to the moist climate and perpetual summer fogs of the redwood region which follows the coast from the Oregon line into Santa Cruz county (a belt of about 350 miles long by 10 to 30 miles wide), and it is partly due to the absence of resin in the wood and its thick non-combustible bark.

The primary pine region extends from the Oregon line south through the Sierra Nevada mountains following closely the line of winter snows and being 2000 to 3000 feet above sea level. The timber is in open, parklike stands and in early days the forest floor was kept clear from brush and litter by the light burning practiced by the Indians and the occasional fires caused by lightning. The trees passed through several centuries of these fires to make splendid timber. Fire scars show that many of the trees were burned more than thirty times, but without permanent damage.

In these days of close fire prevention and control a rank growth of underbrush has sprung up in California pine forests and there is much debris in places. This causes hot fires which are hard to control and often burn mature trees.

Fire tends to prevent fire, as is shown by the small timber losses of 1912 and subsequent years, following 1910, in which year forest fires were the most disastrous known for years in California. Since 1915 the loss each year has been greater than the season before, increasing from less than 2 per cent of the 1910 loss in 1915 to over 60 per cent in 1919, thus showing that the underbrush is accumulating.

Under the auspices of the California Section of the Society of American Foresters a discussion of controlled burning in spring and fall for the purpose of keeping brush and litter out of the mature forests is being carried on. The Southern Pacific Railroad Company has offered to cooperate with the United States Forest Service in carrying on an experiment in a large tract of land embracing all conditions, but the Forest Service has refused this on the ground of having already sufficient data to establish its policy of complete fire prevention.

* * *

## Would Bar American Architects

With a view to putting an end to American architects practicing in British Columbia, the architects of the province have a bill before the Legislature which provides incorporation for an architectural institute, and also protects Canadian architects. The clause which debars American architects from practicing is as follows: "An architect seeking admission under this Act, who is a citizen of a foreign country or state, shall be admitted to practice architecture in this province on passing such an examination as may be prescribed by the council; provided that such foreign country or state of which he is a citizen recognize the standards of qualification set out herein on an equal footing with their own, and admit the members of this institute equally with their own citizens."—Contract Record.

## Minimum Room Sizes for a Small House

ANSWERING the question, "What do you consider the minimum room sizes for a small house?" Mr. Edwin B. Goodell, Jr., architect, offers the following suggestions in House Beautiful:

In these days when the cost of building is so high, every square inch of plan must be used, and if the average house-seeker is to have a home at all, he must build it as small as can be. The cost of a house is in its size much more than in its detail, excepting, of course, any elaborate detail which is prohibited in the so-called moderate priced house of today.

The hall is a place which everyone likes to have spacious. They like to look from the front door through the garden door and out on to the terrace. If space is to be saved, however, the hall can be cut down very appreciably, and attractive stairs and halls have been designed in the minimum of space by using an enclosed stair, that is, one which goes up between walls. The hall can be as small as five feet square, and still be very nice. ,

Living rooms really must be comparatively spacious. Twelve feet by sixteen should be considered the minimum. A saving of space can be effected by combining living-room and dining-room into one room, and where one does one's own work, the inconvenience should not be great. A dining room must never be less than eleven feet by twelve. This is the minimum size in which a forty-six inch or forty-eight inch round table can be placed and still allow passage behind the chairs. This also provides room for an average serving table.

The size of the kitchen is subject to personal likes so that it is dangerous to say what is adequate. A stove, combination gas and coal or electric, two tubs and a sink can be had in a kitchen nine feet by ten feet, but there is no remaining room for a central table. In connection with a kitchen as small as nine by ten there must be a kitchen pantry and a cold closet.

The size of a bedroom depends on its purpose, whether for single, double, or twin beds. A bed table, dresser and single bed can be had in a room nine by ten; twin beds in a room twelve by twelve, and a double bed in a room ten by twelve. Bedrooms should not be made smaller than dimensions given.

Five by eight feet is the smallest room in which the bathroom fixtures can be conveniently arranged.

A closet not less than two feet by three feet must be provided for every single room, and two of this size for double rooms.

In some of the recent housing schemes, bedrooms are shown as six by nine, living-rooms eight by ten, but it seems to be carrying economy much too far. While it is never recommended to have small rooms, if larger, more convenient rooms can be afforded, yet the dimensions given here can be used and the rooms will be very livable.

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## Children and Apartment Houses

THE owners of apartment houses in San Francisco, as the result of a month's campaign directed against them by several civic organizations, have changed their ruling with regard to children. During the campaign the accusation was made that the average apartment house owner would not, under any circumstances or conditions, permit small children to live in their apartments. To meet this condition, a special meeting of the civic organizations and the apartment house owners was held, at which the apartment house owners agreed to take in children, provided that persons who have children sign an agreement to pay for any damage inflicted to the furniture, furnishings and general equipment of the apartment by their children during their tenancy.

Such a contract system might be followed by apartment house owners in other cities, where a similar campaign has been started by ministers, judges and others to give the apartment house business a bad name as a destroyer of family life. The apartment house owner should adapt himself to present conditions, and as houses are now scarce, he will have no trouble in filling apartments left vacant by those who object to children.

From Vancouver, B. C., comes word of an apartment house now being constructed in which special arrangements for children and their care are being made. The building is intended primarily for families, and for this reason numerous amusement features and a playground will be installed. The house will cost in the neighborhood of $600,000 and will be one of the largest apartments in America.—Building Management.

* * *

## Institute Architects Hear Address on Housing

DR. J. H. McBRIDE, of Pasadena, delivered an interesting address on "Housing" to the Southern California Chapter of the American Institute of Architects at its March meeting. Dr. McBride is a physician of note and a member of the State Housing Commission. Through his studies and experience he is thoroughly imbued with the importance of proper housing to the human race. His lecture was illustrated with stereopticon views. The photographs of slum districts in London and Liverpool which have been transformed into districts of modern homes either by municipal action of through private enterprise, were very interesting. Dr. McBride also showed views of the Garden cities which have been established at Port Sunlight, Letchworth and other sections of England. In these towns from six to twelve houses per acre are erected and two-thirds of the area of the city is reserved for parks, playgrounds and school grounds. The houses are let at a nominal rental. Dr. McBride stated that housing conditions could be and are being improved by legislation, but that the proper protection of human life and the decrease of the death rate was largely an economic question. If the workers receive a proper remuneration they, as a general rule, obtain proper dwellings. But if their income is insufficient they are either compelled to live under improper conditions or obtain a proper habitation at the sacrifice of food and clothing.

The meeting was held at the Adobe Flores, an old adobe residence near the Raymond Hotel in Pasadena. The building is about 100 years old and was recently restored and remodeled into a tea room by Mr. Carleton M. Winslow. Mr. S. B. Marston of Pasadena, was master of ceremonies and had charge of the arrangements, while Mr. Myron Hunt acted as toastmaster. Mr. Ben Marshall of Marshall & Fox, prominent architects of Chicago, was a guest and complimented the architecture of the Pacific Coast.

President Bergstrom presided at the business meeting and announced that Messrs. Chas. F. Plummer and J. T. Zeller had been elected to membership in the Institute. Mr. John W. Mitchell, a prominent attorney of Los Angeles, and an honorary member of the Chapter, will have charge of the arrangements and program for the next meeting.

* * *

## California Housing and Building Institute

A state-wide organization to secure modifications of municipal and state building regulations in conformity with economic and scientific progress has been started by leading property owners, material manufacturers and dealers, architects and realtors of Los Angeles and San Francisco. It will be known as the California Housing and Building Institute. Mr. Mark C. Cohn, who has had long experience in building and housing legislation, will be the executive director.

Full details of the Institute's program is available from the temporary office at 512-514 Foxcroft building, 68 Post street, San Francisco.

## Longest Spans for American Bridges

FOLLOWING is a list of the longest spans for different classes of bridges in the United States, compiled by Mr. Henry S. Jacoby, professor of bridge engineering, Cornell University:

Simple plate girder—130 feet 6½ inches, Grand Crossing Illinois, on the Nickel Plate railroad; completed in 1916.

Steel viaduct, 100 feet, Lethbridge, Alberta, on Canadian Pacific railway; completed in 1909.

Simple truss, riveted, 643 feet 10½ inches, Louisville, Kentucky, Pennsylvania Lines; completed in 1919.

Simple truss, pin, 720 feet, Metropolis, Illinois, C., B. & Q., and N. C. & St. L. railways; completed in 1917.

Swing plate girder, 236 feet, over Lachine canal near Montreal on Canadian Pacific railway; completed in 1915.

Swing, truss, 521 feet, Portland, Oregon, on Northern Pacific railway; completed in 1908.

Vertical lift, 296 feet, N. Mondak, Montana, on Great Northern railway; completed in 1914.

Vertical lift, floor only, 428 feet, Kansas City, Missouri, on Terminal rail; completed in 1911.

Bascule, single leaf, 260 feet, Chicago, Ill., on St. Charles Air Line railway; completed in 1919.

Bascule, double leaf, 336 ft., Sault Ste. Marie, on Canadian Pacific railway; completed in 1914.

Aerial ferry, 393 feet 9 inches, Duluth, Minnesota, over U. S. Ship canal; completed in 1905.

Continuous truss, 775 feet, Sciotoville, Ohio, on Chesapeake & Ohio and Norfolk & Western railroad; completed in 1917.

Cantilever, 1800 feet, Quebec, Canada, on Grand Trunk railroad; completed in 1917.

Suspension, 1600 feet, New York City, Williamsburgh bridge; completed in 1904.

Steel arch—3-hinged, 592 feet, Needles, California, highway bridge over Colorado river; completed in 1916.

Steel arch—2-hinged, 977 feet 6 inches, Hell Gate, New York City, on N. Y Connecting railroad; completed in 1917.

Steel arch, not hinged, 519 feet 9⅜ inches, St. Louis, Missouri, on Pennsylvania Lines; completed in 1874.

Stone arch, 220 feet, Washington, D. C., aqueduct bridge; completed in 1864.

Plain concrete arch, 281 feet, Monroe street, Spokane, Washington; completed in 1911.

* * *

## Washington State Chapter to Hold Exhibition

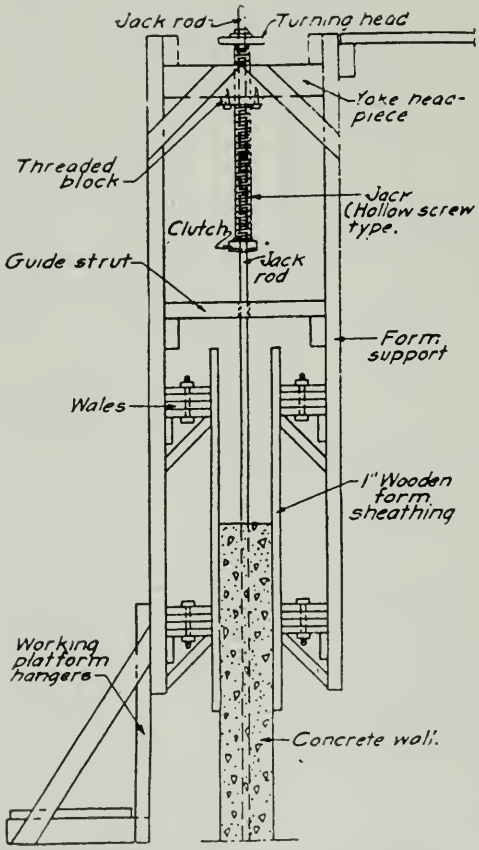
An exhibition of architectural renderings, photographs, sculpture, pottery and furniture will be held under the auspices of Washington State Chapter, A. I. A., from March 28th to April 15th, in the galleries of the Seattle Fine Arts Society, 1213 Fourth avenue, Seattle.

It is not the intention to limit the exhibition to work of chapter members, but every effort will be made to select work which will contribute to the effectiveness of the exhibition.

The Exhibition Committee is composed of Messrs. Roland E. Borhek, Arnold E. Constable, J. S. Cote, Carl F. Gould, David J. Myers, Ellsworth Storey, Louis Swarz, Joseph Wilson, and Andrew C. P. Willatzen, chairman.

# Sliding Forms for Concrete Construction

THE term "sliding forms" is used to designate that system of building monolithic concrete walls wherein the forms are moved continually upward as concrete is placed. Such forms include not only the forms proper, between which the concrete is placed, but the apparatus necessary to lift them. The forms proper are usually of wood and in general consist of inner and outer sections, four feet high, held apart the thickness of the wall by yokes. The yokes are supported and lifted by means of jacks which in turn derive their support from vertical rods or pipes embedded in the concrete.




SKETCH ILLUSTRATING ESSENTIAL FEATURES OF SLIDING FORMS FOR CONCRETE CONSTRUCTION

An accompanying diagram illustrates the usual arrangement and principle of sliding forms. The main objects to be attained are to produce a truly monolithic structure, that is, one without construction seams, and to effect economy of form material. Obviously this requires continuous placing of concrete twenty-four hours daily. In the operation of raising the forms it is essential that they be moved upward at a steady and uniform rate, so that the concrete will not adhere to them and thus be carried with the forms when they are jacked up. It is essential to pro-

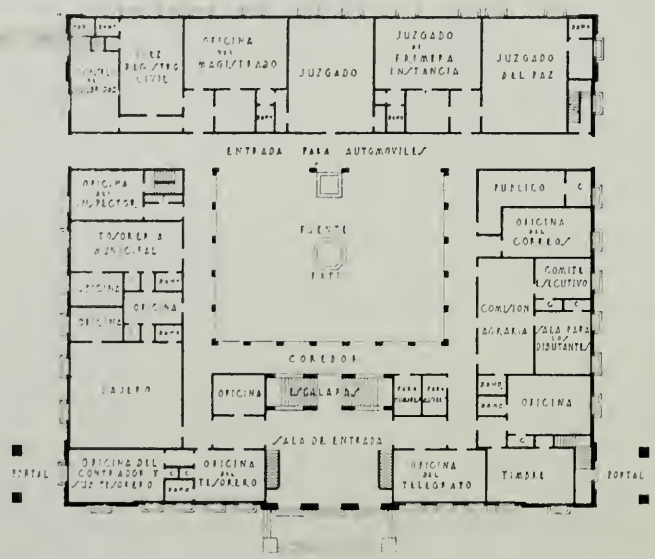
ducing walls truly vertical and of the same thickness at all points that the forms be kept in exact horizontal and vertical relation to each other. These requirements indicate that although the system is quite simple, experience and constant watchfulness are necessary to obtain the best results. It is also evident that the system of jacking up forms must permit of positive control on the part of the operator and that no slipping of the jack on its support shall take place.

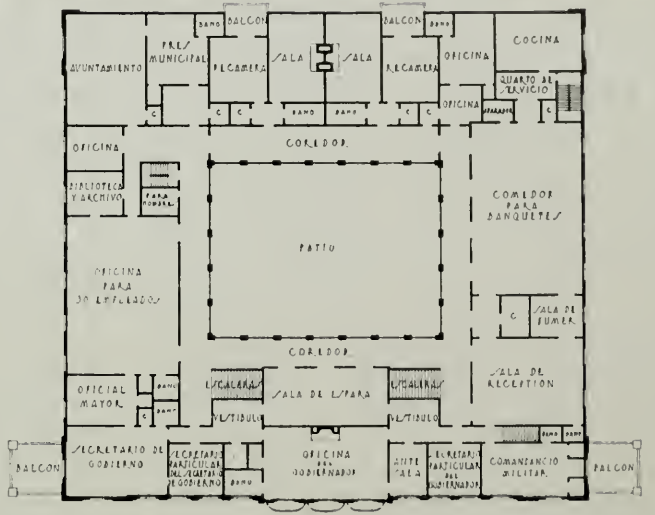
The forms are usually made up of an upper and lower wale, consisting of two-inch planks with broken butt joints. In circular concrete construction, one edge of these planks is cut to a radius of the wall surface plus or minus the thickness of the sheathing. Thus there is an inside and an outside pair of wales cut to segments proper for the curve of the outside and inside of the wall, respectively. To these built up wales, one-inch sheathing about four feet long is nailed, usually with triangular bracing between the wales to give the forms required rigidity. The yokes are attached at intervals to these forms and may be entirely of wood, although the head piece is often made of steel plates so as to insure little variation in the separation of forms and to give a rigid yoke member to take the lifting action of the jacks.

Jacks used are of several different types, some of which are patented. Two types are common. Both of these work on the jackscrew principle. A common type of jack consists of a hollow screw fitted at its top with a turning head and at its bottom with a device commonly known as a clutch, or "dogs," for gripping a vertical jack rod which is embedded in the concrete. The jack rod passes up through the center of the jack, which in turn passes through the threaded head piece of the yoke. By turning the turning head with a bar, the yoke is caused to move up, taking the forms with it. Successive turnings of the jacks through the same angle will thus cause every portion of the forms to move the same distance. A strict regulation of the amount of turning which each turning head is given is absolutely necessary to correct operation of the forms.

Another type of jack consists of a threaded rod fitted with a collar which bears on a one and one-quarter-inch pipe embedded in the concrete. The threaded rod passes thorugh the head piece of the yoke and is fitted with a turning head. The pipe is made in three-foot lengths, cut square at the ends and without threads. The lower end of the threaded jack rod extends down through the thirty-foot length of pipe and six inches into the pipe below. This keeps all of the three-foot lengths of pipe in line, while the collar bearing on the top of the uppermost pipe furnishes a postive support to the jack. When the forms have been raised the full distance of their travel for one position of the jacks, the clutch is released, the jack moved up and a short length of rod or pipe, as the case may be, placed on top of and in line with those already embedded in the wall. The clutch then engages the rod and the work proceeds. When rods are used, the successive short lengths are connected by sleeves.

Sliding forms have been used for a considerable variety of structures. These include standpipes, water tanks, grain tanks, grain elevators, mills and chimneys. They are also adapted to the construction of hollow concrete piers and warehouse walls, although so far but little used in such construction. When such forms are used by experienced contractors on the latter class of structures, window openings can easily be provided for and cross beams from one wall to another be built without special difficulty.—Contract Record.




GOVERNMENT BUILDING, MEXICALI
WM. H. WHEELER, ARCHITECT
JOSE SOLOSANO, ASSOCIATE

## New Government Building for Lower California

THE new Government building at Mexicali, Lower California, illustrated on the opposite page, was designed by Mr. William H. Wheeler, architect, of San Diego, and a member of the Southern District, California State Board of Architecture.

This design was selected by competition after a public invitation on December 9th, 1918, by Mr. E. Cantu, governor of the District of Lower California. Construction of the building is now under way. It is of reinforced concrete throughout. The outer walls are of hollow concrete construction, along the lines of the Turner method of reinforcement, and every precaution has been taken to make the building quake-proof, for Mexicali, like all other towns in the Imperial Valley region, is in a constant state of vibration.

The ground floor contains all offices for the state and municipal officers. A feature is the large open patio with its balconies and fountain and provision for a national monument. The second floor contains the suites of the governor and secretary of state, banquet chamber, reception hall, smoking rooms, etc.

The design is typically Mexican. Mr. Wheeler acknowledges the services of a well-known Mexican artist, Mr. Jose Solosano, whose colaboration produced a touch of Aztec origin—symbolic of Mexican architecture and a credit to Lower California.

The cost of the building will approximate $110,000, and it is hoped to have it completed within the next few months. The finish throughout will be of hardwood, and provision is made for both heating and cooling systems and electric fans. The suites of the various officials and the banquet chamber will have maple floors.

* * *

## Blueprints and Drawings Waterproofed by Saturating with Molten Paraffine Wax

ARCHITECTS, engineers, contractors, linemen, etc., often have occasion to refer to drawings and blueprints, in all kinds of weather, and usually find that before long their prints are in a very dilapidated condition. A simple way of overcoming this trouble is to render them waterproof by saturating them with paraffine wax such as is used for sealing fruit jars, etc., and sold under the name of Parowax.

If the prints are placed directly in a pan filled with this molten wax, they will soak up too much of it and will always feel more or less greasy to the touch. The most convenient way, therefore, is to soak a number of pieces of absorbent cotton cloth a foot or more square, in the wax. When these pieces of cloth are cool lay as many as are required (depending on the size of the blueprint) on a table or other smooth surface, place the print on top of these and then on top of the print lay more of the cloths until it is entirely covered. After this is done it is only necessary to run a hot iron over them for a few moments. The print will immediately absorb the paraffine until the surfaces become saturated. If the table on which the work is carried out has a highly finished surface, a layer or two of heavy wrapping paper should be placed between the cloths and the table. Should one of the family irons be used in the process it would also be a good plan to interpose a piece of wrapping paper between the iron and the cloth also, as it will prevent the iron from being fouled with the wax.—F. A. McLean in Contract Record.

# The Building Situation

THE building situation with its accompanying high prices and growing scarcity of materials is an all-absorbing topic with architects, engineers and contractors, and opinions are varied as to just what is to be the outcome. Whether construction will proceed with a boom or whether there will be a complete cessation of building operations are questions which it would seem time alone will answer.

Builders are advised to wait no longer, in an article in Literary Digest, which says:

Do not put off till next year the building that might be started this spring, is, in short, the advice given to prospective builders and investors concerned about building, by Mr. Allen E. Beals, secretary of the Dow Service Daily Building Reports. Building costs are excessively high, but this expert insists that nothing is to be gained by waiting unless one is prepared to wait five years or more. As Mr. Beals reminds us in a signed article on the financial page of the New York American, "after the Civil War thirteen years elapsed before the price of building materials reverted to prewar levels." Even though the price peak of materials may be reached in less time than that, it seems to this authority on the building market that there will be a high price level either at or above the present prices which will be maintained for a long time. So the best thing for the builder to do is to start his plans at once instead of waiting until next spring and finding that prices are still higher. The builder need not expect a speedy job. Up to the present the lack of labor has been interfering with the completion of work, but Mr. Beals believes that "from this time forth the retarding factor will concern itself to the ability of getting materials as they are needed." But there are things "that are decidedly in the builder's favor," we are told: they include the present market price, for building material will not suddenly recede; he will be assured of high returns upon his enterprise for at least two years after the supply of building material and their prices return to an approximate normal, and he will get probably a better constructed building because less reliable contractors are now out of the market. Discussing the whole building situation, Mr. Beals notes that "since the armistice a year ago the building interests have passed through a vale of paradoxes that has no parallel in war or in any other era in the memory of business men," and he continues:

"The building-material man, whether he be manufacturer, distributor, dealer, contractor, or consumer, is today confronted with a potential demand far beyond the plant capacities of the entire country to meet for the next five years, at least, even operating at 80 per cent of maximum plant output, which, with the shortened work-week and scarcity of common labor, restricts actual production of building commodities in the basic departments at least to barely more than 50 per cent.

"To the prospective builder of home, factories, commercial buildings, or the investor designing and contemplating the construction of hotels, theatres, apartment houses, or tenements, this looks like a forbidding outlook. In the last year it has checked actual building construction to about 40 per cent of normal for New York and vicinity."

In the Middle West there was more foresight, coupled with the advantage of having close at hand the centers of building material supply. It accepted the alternative of paying higher prices instead of waiting for them to recede, and went ahead with building. New York preferred to wait in the expectancy that prices would drop. "This policy," quoting Mr. Beals, "is to be a costly experiment in procrastination." He continues:

"Labor disturbances have so absorbed the attention of prospective builders that no artificial means were applied to revive construction. Contractors were obliged to refuse tenders to estimate on building projects. Recently many of these most important trade problems have been ironed out, and once more the steel skeletons of buildings poke their black angles above the neighboring house-tops. The lumbering girder truck, absent from the city's streets for nearly two years, is once more adding to the problems of the traffic policemen at busy corners, and houses by the hundreds are being started at a time of the year when building construction normally is retarded to wait for more auspicious weather conditions in the spring."

The small builder, the man of modest means, will be blocked out of the building program. He will find that credits have been tightened against him. For—

"Building construction today and for the next ten years will be on a cash basis. New York is now 33 per cent short of buildings, and therefore uncertain credits are crucial liabilities when a demand like that exists. Because the market is only open to the financially strong, the question of building material purchase is no longer one solely of price, but of delivery. The question is not one of shopping for lower figures, but how certain will be deliveries if there are labor disturbances, railroad embargoes, etc.

"Being a sellers' market, the manufacturer can fix his price f. o. b. mill, and the buyer assumes the risk from that point. Mill prices or dock prices at New York today are far and above prices covering delivery on jobs of five years ago, and the trend is still higher. Here are some illustrations: Asphaltum in tank cars to contractors is $13 to $15 per ton as against a normal of $8 and $9. Hudson common brick that formerly could be delivered to a job, New York, at $9 a thousand, now sell at dock for $20 wholesale, with the possibilities excellent for the price to be $22 before January 1. Portland cement retails today at $3.40 a barrel, with a 15-cent rebate on empty bags, as against $1.90 in 1912; gravel sells delivered at job today at $2.75, as against a normal of $1.25.

"Long-leaf yellow pine, glass, structural steel, zinc, and every item that enters into building construction reveal the price that the procrastinator has to pay today as a result of his expectation that building material prices would recede within a year from the time the armistice was signed. After the Civil War thirteen years elapsed before the price of building materials reverted to prewar levels. Even tho the price-peak of present-day materials may not now be far off, there will be a price-plateau upon which building-material prices at or above present levels will prevail until such a time as labor adjusts itself to new conditions: until the supply of man-power is increased; until production can regain pace with demand, and until it again becomes possible for the moderately capitalized building speculator to get into the market.

"The building-material price trend is upward-bound now. As the demand increases the prices will be forced higher. The best thing to do is to start building plans at once, because it is certain that next spring building-material prices will be considerably higher than now."

* * * *

"So long as the public is willing to pay any price asked," says the National Builder, "and in fact, so long as individuals and business concerns are bidding against each other for both material and service of all kinds, prices must continue to advance.

"The often-repeated declaration that 'the country has a shortage of more than 1,000,000 homes' may be reasonably expected to have a more solid basis of fact next year than it has today. The reason for this expectation is that the country is expanding. Its business is expanding. Manufacturing concerns are seeking factory locations. They are finding desirable locations. But how about the labor to run the factories? Where are the workmen and workwomen to live? The housing accommodation of the town or city is short of the needs of the new enterprise or enterprises. A housing program then is arranged for one, two or three hundred or more houses. Advertisements are sent broadcast for carpenters, masons and laborers. Placards are even placed on the walls of buildings under construction offering higher wages than the workmen on the job are receiving. The union scale and the contract price becomes a joke. The professional builders keep faith with each other as far as they can, though, under some circumstances they face ruin under the uncontrollable competition of large enterprises that can afford to stand the loss of high building cost because it is a mere incident in the way of obtaining the profits of their manufacturing business.

"It is true that workmen who leave their jobs in response to the lure of higher pay find that they have lost in the long run through other expenses and personal discomfort. Some time must be allowed for the men to realize that all is not gold that glitters, and that the labor organizations that serve the interests of their membership best are those that hold contracts inviolable.

"The top of the building materials market will, in the opinion of authorities, be reached during the coming summer and will be adhered to until well into the autumn of 1922. Prices will not reduce so long as production is arbitrarily limited and cost maintained by high wages. The market of the material man being narrowed by high prices, his business is not helped but rather injured by these circumstances, and thus the contradiction is seen of the material man trying to hold buying within reasonable bounds to enable him to hold his cusomers until increased production can permit him to serve them more liberally. As these men are seemingly working against their own interest, a deeper insight into the real condition and the future will show that their course of action is in the nature of a struggle to keep from being submerged, and this they hope to do by keeping their business moving in as wide circles as possible. Reputation and a business name must be kept identified with an industry by constant activity, and the effort is to keep too many eggs from getting into one basket."

* * * *

That prices have reached their pinnacle and are about to fall is the prediction of a writer in Engineering and Contracting, who goes on to say that, "a great reduction in exports from this country is imminent because foreign countries have practically exhausted their credit and have only sufficient gold for their domestic needs. During 1919 our balance of trade (excess of exports over imports) was about 4.5 billion dollars. Since all the nations of the world combined have only 9 billions of gold, of which this nation already has one-third, it has been evident for some time that our export trade must ultimately receive a check. The check has apparently come.

"What will be the effect upon American prices if our exports to Europe take a great and sudden drop? Obviously the effect will be the greatest in the industries that have been furnishing most of the exports; but there will also be some effect upon the general price level. Prior to the war the total income of all Americans was estimated to be about 50 billion dollars. Due to rises in wages and profits, the present income is probably about 75 billion dollars. If, therefore, our exports in 1920 should decrease 4.5 billion dollars, the decrease would be only 6 per cent of the total income.

"In a falling market there is a tendency for price levels to decrease much more rapidly than the actual curtailment in business would alone warrant, and the converse is true in a rising market. Therefore, a rapid decrease of, say, per cent in total annual income is apt to cause about 12 per cent decrease in the general price level. While this would be a large decrease in prices, it must be remembered that index or average prices now are more than 100 per cent in excess of pre-war prices.

"When our civil war ended in 1865 average prices had risen 105 per cent during the four years of war, a rise almost the same as during the recent world war. During our Civil War the amount of money had increased 50 per cent, or almost exactly the same increase as occurred in this country during the recent world war. But it was not till 1878, or thirteen years after the end of our Civil War, that average prices got back to the level of 1861. In short, prices dropped only 8 per cent annually for thirteen years, although they had risen 26 per cent annually during the four years of war.

"The three great factors that caused the drop in prices following our Civil War were: (1) The psychological effect of a shrinking market. (2) the increase in population, and (3) the increase in labor efficiency.

"We have already spoken of the psychological effect, and need only repeat that business men naturally tend to curtail their production when price levels are falling. Population increased about 3.5 per cent annually after the Civil War, due mainly to immigration. Since each added worker requires a certain amount of money directly for his personal needs as well as indirectly for financing his industrial operations, it follows that an increase in population tends to reduce price levels by decreasing the per capita supply of money. This was partially offset (1865-1878) by an increase in the total supply of money.

"The third factor operating to reduce prices after our Civil War was the increase in efficiency of the average producer. This was due in part to the rapid expansion of our railway system, which opened up rich agricultural lands. Perhaps the main factor was the raipd increase in the use of labor-saving machinery of all kinds. That was an era of enormous improvement in farm implements, which was reflected by the relatively slow increase in agricultural population compared with the very rapid increase in urban population. Also our manufacturing efficiency increased at a rapid rate, mainly because of the invention of numerous labor-saving devices.

"Contrasting the relative intensity of the factors that affect prices today with those following the end of our Civil War, we find nothing that leads to an expectation of a more rapid decline in prices than the 8 per cent annual decline during the thirteen years following the Civil War. It is true that the psychological factor is about the same in both cases, and will tend to lead business men now, as it did in 1865, to curtailment of production on a falling market. But, on the other hand, there is likelihood that our per capita money supply will increase more rapidly than during 1865 to 1878, both because our population is never again apt to increase at the rate of 3.5 per cent annually, and because foreign nations owe America and Americans 18 billion dollars. From 1900 to 1910 our population increased 20 per cent, about half of which was by immigration.

"What of the probable rate of increase, in average productive efficiency per worker per annum? The outlook is by no means hopeful for the near future. Labor unions during the year 1919 were granted an average reduction of 8 per cent in daily working hours, and the end is not in sight. If workers were to respond to reduced hours by corresponding increases in hourly output, this economic element could be ignored, but the fact is that they usually adhere to their original hourly speed. It is perfectly idle for the editors of the daily press to call upon workers to increase their output as any man experienced in handling men knows. A few labor union leaders are beginning to suggest increased outputs as a means of decreasing prices and increasing wages, but we fear that it will be many years before this advice will become a slogan of the working classes.

"As an effective factor in causing a steady decrease in prices, there is left what? The efforts of brain workers—educators, pure scientists, inventors, engineers and business men. We put educators at the head of the list. In this class we include all writers whose object it is to spread knowledge that will increase human efficiency—notably the authors of technical articles and books. Were our schools and colleges better planned and better manned, our teachers would be far more effective than they are likely to be during the next ten years as trainers of efficient producers. But even as it is, they are the greatest factor in American progress, and are likely to become relatively greater; for here and there a teacher inspires some boy to become a great brain worker. And all economic progress is attributable, in the final analysis, to brain workers."

# Refrigeration in Apartment Hotels

By CHARLES FELLOWES, in *Building Management*

A VERY interesting subject in the consideration and planning of a large apartment hotel is that of refrigeration, and a decision as to the installation of a plant is attended with considerable difficulty. The desirability of refrigeration in apartments, furnished from a centrally operated plant, is not debatable, if it can be reliably furnished at a reasonable cost, and the mechanical operation of the plant is satisfactory.

It would be a distinct advantage to eliminate the handling of ice under the old and existing methods. The delivery of ice by trucks through corridors, and the necessity of daily access to apartments by attendants in order to place the ice in refrigerators are objectionable, both to the hotel and the occupants of the apartments. These objections would be eliminated by service from a central plant, and the furnishing of refrigeration superior to that of ice would be an additional attraction to tenants.

Mechanical refrigeration furnishes a reliable, dryer and more even temperature at all times; is cleaner and more sanitary, and there are no impurities, slime, etc., which are objectionable in the use of ice.

An investigation of the subject does not result in securing sufficiently satisfactory data regarding this type of building, to enable one to decide the question with the degree of assurance and satisfaction with which other matters are usually decided. This is principally due to the fact that there are no large apartment hotels having apartments of the small or intensified type in which refrigeration plants have been installed, as far as the writer and other persons interested in the subject have been able to learn.

The attitude of some architects regarding installations in this type of building has resulted in a disinclination on the part of prospective owners to equip their buildings, as conditions have not been plainly enough defined, and something more definite in the way of precedent has been necessary to enable them to decide the question satisfactorily.

The subject of refrigeration, of course, is not new, and plants have been successfully operated in apartment buildings for years. Almost all of these buildings, however, are those containing large apartments, large units, which involve more simple and less complicated systems of piping than would be required in large buildings having a large number of small apartments.

It is contended by these architects who have not made installations in buildings now under construction, that while plants have been in successful operation in apartment buildings containing large apartments, as well as in other types of buildings, that they do not feel assured that a refrigeration system can be satisfactorily operated in a large apartment hotel having small units. They contend that a large number of small apartments requires a complicated system of piping that will result in unsatisfactory operation, and that if it were possible to operate satisfactorily in this type of building the system of piping required would perhaps involve a cost that would be prohibitive.

They are not in a position to substantiate this, however, for the reason that there has been no installation as far as they have been able to learn in a large building of this type, therefore their position is entirely theoretical. They admit satisfactory operation in buildings having large apartments, and in comparatively small buildings having small units, but be-

lieve that it would be an entirely different proposition where a large number of small units are to be served.

This attitude is entirely theoretical, and as a result of the writer's investigation of the subject he is inclined to believe they may be mistaken in their theories, for reasons given later herein. This statement is contrary to the brief references of the writer in previous articles wherein he quoted the architects referred to. After this investigation, however, he would not perhaps be influenced to as great a degree in deciding this question by a lack of confidence in the mechanical operation of the plant, as by the cost of installation and the question as to whether he would be warranted in making such an installation on account of the investment involved.

The refrigeration men claim that the position of these architects is entirely incorrect, and that they would not undertake such installations if they were not entirely sure of satisfactory results. They refer to the many large commercial hotels that are equipped with refrigeration plants for drinking water in guest rooms, which require a more complicated system of piping than apartment hotels having the small units. That these small units are always of more than one room, whereas the commercial hotels consist almost entirely of single rooms, involving even a more complicated system of piping, and that there is no reason, theoretical or actual, to prevent satisfactory operation in an apartment hotel regardless of its size or number of small units.

The only difference in the two types of buildings, according to their statements, is that the terminals in apartment hotels are the coils in the refrigerators, which add but little to the burden of the plant, and that the piping is somewhat larger and the pipe covering thicker. These, and the fact that one involves the circulation of the brine through the refrigerators, which requires more power, while the other circulates water which is cooled in the basement, are the only features in which there is any difference.

Naturally, the cost of installation varies, according to the system selected, the type and size of the plant, the number and size of the apartment units to be refrigerated, and their comparative distances from the ice machine. It will assist in conveying some idea of the cost of a plant to refer to some specific examples and two or three will be cited for that purpose.

A large apartment hotel, in Chicago, eleven stories in height, consisting of eighty-four apartments, ranging in size from one to six rooms, was equipped a year or two ago with a plant for drinking water for each of the apartments. The hotel kitchens, which are quite extensive, are also served. This plant is the ammonia system, and cost $6,500, which includes a high pressure unit, the brine tank, and the motor and pump for circulating the brine. This included complete installation, without the extension piping. The piping to the various terminals is charged for at the rate of $2 per lineal foot and consists of pipe and standard cork pipe covering and the labor for installing it. The total cost of equipment and piping was about $12,000.

The extension piping in the usual apartment hotel having large apartment units, will amount to approximately the same as the equipment charge. The cost is, of course, greater where the units are small. The small or intensified apartment units will generally cost about twice that of the equipment. In other words in a large apartment hotel having the intensified apartment units, the equipment would be about one-third, or

less, and the extension piping and covering would be about two-thirds or more of the total cost.

Another example is that of a building now under construction which will have 112 small apartment units, each with a refrigerator. The contract price for the installation, which is the ammonia system, will be approximately $21,000, of which amount $5,900 is for equipment charge and the balance, or approximately $15,000, for the extension piping. Of the amount for extension piping approximately $6,900 is for the pipe and $8,100 for cork insulation. Other examples might be given, but the costs and proportionate costs are about the same, so that the examples given above will serve the purpose.

As to the cost of operation, an example will be given of an apartment hotel comprising seventy-two apartments, which has had a plant of the carbon-dioxide system in satisfactory operation for seven years. The apartments are not strictly intensified, but range from one to four rooms. The tenants were charged at the rate of $1.50 monthly for each apartment at first, but it was learned that this would be insufficient, and the charge was later increased to $2.25. Later an increase of $5 per month was made in the rental of each apartment and the refrigeration included. This amount includes a profit, according to the owner, of $2 per month for each apartment.

The building above referred to of 112 apartments proposes to charge $5 monthly for each apartment by adding that amount to the rental. The claims made by the agents of both the carbon-dioxide and ammonia systems are that they are inexpensive in operation. An engineer is unnecessary to operate either of the machines, and it is merely necessary to start the motor and turn on the condenser in the morning and shut them off at night, filling the oil cups, etc., with perhaps a little more attention at intervals.

The agent of one of the systems presents the following as an estimate of the amount required to operate a plant of 112 apartments, the same as the above, accepting the amount given as the cost of the plant:

| | | |
|---|---|---|
| Cost of equipment or machinery..... | | $ 5,900.00 |
| Extension piping—(Pipe) ..... | $6,900 | |
| (Cork covering).... | 8,200 | 15,100.00 |
| Total cost of plant ..... | | $21,000.00 |
| Cost per apartment (112) ..... | | 187.50 |

* * *

## Schedules of Engineering Fees

The accompanying abstracts from various proposed schedules of fees for engineering services are of considerable interest. They were compiled by Baar & Cunningham, Engineers, Portland, Ore.

American Institute of Consulting Engineers—A per diem rate of from $100 per day upward is proposed. On a percentage basis 1½ to 3 per cent is allowed for preliminary surveys, studies and reports. For preliminary surveys, etc., with the addition of detailed plans and specifications, 2½ to 5 per cent. For preliminary work, plans and specifications, and general supervision during construction, 4 to 5 per cent, or higher on small jobs. For full professional services, including detailed inspection and management, 6 to 10 per cent or more.

The Pacific Association of Consulting Engineers—The minimum per diem rate of this association is $50 per day. The percentage fee for preliminary studies, working drawings, specifications and contracts and general direction of the work is fixed at a 5 per cent minimum. No suggestion is made for full professional services, including inspection.

Civil Engineers' Society of St. Paul—A percentage fee for a preliminary report with general plan and estimate of cost is fixed at ¾ per cent. For complete plans and specifications, including preliminary report and survey, but exclusive of soundings and borings, the fee is fixed at 3½ per cent for work costing less than $10,000; 3 per cent for work costing less than $25,000; and 2½ per cent for work costing less than $50,000. For consulting superintendence, the charge is 2½ per cent of the cost of the work. This does not include inspection.

Mahoning Valley Ohio Engineers—The per diem rate is $25 per day. Per diem rates are also fixed for the services of assistants of various classes. On a percentage basis for sewer work, including engineering and supervision, 8 per cent is charged for the first $15,000, and 7½ per cent for the second $15,000 of the estimate. For paving work, 7 per cent is charged for the first $15,000, and 6½ per cent for the second $15,000. The client is to pay for one inspector on percentage work. It would appear that the intention is that these fees are to cover simply general supervision, but not inspection.

Iowa Engineering Society—The per diem rate is fixed at $15 to $25 per day. The percentage rate for preliminary services is 1½ per cent for these services and in addition the preparation of drawings, specification and contracts, and letting the contract, 2½ per cent. For all preliminary services, and also consulting supervision of the work, 5 per cent. For full responsibility, including inspection and all engineering services, 6 per cent.

Edmund T. Perkins' Paper Before the Illinois Society of Engineers—This is an elaborate schedule, and proposes a sliding scale for charges on work of varying magnitude. The fee for full professional services, including superintendence, varies from 12½ per cent for jobs of less than $5,000, to 4.2 per cent for jobs of over $500,000. These percentages do not, however, include inspection. The statement is made that, "A schedule rate for superintendence applies when the engineer who has designed and planned the work, or his assistant, superintends construction. All other employes than such assistant or assistants are to be paid by the owner."

Connecticut Society of Civil Engineers—The percentage fee for preliminary conferences, estimates, and reports is from 1 to 1½ per cent. For these services and plans and specifications, 2½ to 5 per cent. For all preliminary services and general supervision of construction, from 4 to 8 per cent. For full professional services, including inspection, from 6 to 12 per cent.

* * *

## Zoning Makes a Better City to Live In

"Zoning makes a city more beautiful; it makes a more healthful city, and a better city to live in," said Oto North, a realtor, addressing members of the Billings, Mont., Real Estate Board. "It gives protection to every element and factor. The wholesale district is by itself; the retail district is in one area; the apartment houses are apart from the detached dwellings; the factories are grouped; the parks are ideally situated, and a civic center is created."

## Joseph Pennell Attacks Billboards

MR. JOSEPH PENNELL, illustrator, etcher and man of energy, will tilt at the offensive and unsightly billboard and will make the battle a nation-wide affair. The distinguished artist is undertaking this work at the request and as representative of the American Federation of Art, and proposes to attack the billboard blot on our landscape in every way possible. In a recent address Mr. Pennell said he no longer had any confidence in an appeal to the artistic sense of the nation for the reason that the people had already been "debauched" by the very evil that it was now found so necessary to correct. This corrupting was done during the war when, for war needs, Liberty loans, Red Cross contributions, etc., etc., the drawing power of the poster was demonstrated and that method of publicity was given an impetus that is now very difficult to check. The seeker of public notice had been quick to follow the government's lead, and now from end to end of the land there was a succession of hideous signboards that night and day offer their wares in the loudest voice that paint and color contrast can emit.

"The result is," says Mr. Pennell, "that you cannot go anywhere without running into mile after mile of billboards, most of them advertising everything that is useless. Artists and others who prefer nature to these vulgar displays have been pointing out for years that they are destroying and debauching the public taste. But progress has been so slow that I have decided to make the attack from a new angle." The artist then declares that the lumber and paint expended on unnecessary and unsightly billboards in America would rebuild and repaint nearly everything destroyed in Europe, and that the labor involved in erecting these atrocities would do much to get us back into a condition of pre-war activity.

The item of electric light, too, is a stupendous waste, as was fully recognized during the coal emergency. Surely, if it was worth saving then it is worth it now, but as a matter of fact the corporations indulging most in this riot of gigantic sign painting, be it by brush or electric light, are merely throwing that money into wasteful publicity rather than to allow it to pass into the public fund as a supertax. "Some of these advertisers have been so brazen," adds Mr. Pennell, "as to thank the artists who helped along the Liberty loan advertising for the valuable suggestions they have given."

A few cities acting independently already have taken up the work of suppressing the billboard evil, just as it has been widely done in many parts of Europe, but scattering effort is not enough. What is now needed is such an ubiquitous and continued fight against the offense that it will be legislated, by prohibitive taxation if necessary, entirely out of existence.

We called attention in these columns recently to the novel method pursued in England, whereby no billboard publicity on any open land was permissible unless the advertisement related directly to the land—"for rent" or "for sale" signs, etc.

New Orleans is becoming daily more disfigured by the billboard, and Mr. Pennell's crusade against the nuisance should be supported here by approval and co-operation.—New Orleans Times-Picayune.

* * *

## Wonder When He Intended to Pay

A Pacific Coast contractor wrote to a firm in the East ordering a carload of material. The firm wired him:

"Cannot fill order until you pay for your last consignment."

"Unable to wait so long," telegraphed the contractor, "cancel the order."

COLONNADE, MISS BURK'S SCHOOL, SAN FRANCISCO
Julia Morgan, Architect

## Recent Examples of Ornamental Plaster Work

THE accompanying pictures show the possibilities of ornamental plaster work when well designed and properly executed. A poor piece of stucco work is a lasting disfigurement and a discredit not only to the architect but to the artisan. The use of good materials, the employment of skilled labor, constant supervision—these are some of the factors that have brought success to the firm of MacGruer and Simpson, whose work is illustrated herewith. Both Mr. George MacGruer and Mr. K. M. Simpson are practical men, having served their apprenticeship in Scotland in all branches of the plastering trade. Mr. MacGruer attends to the figuring and business

CHANCEL, CHAPEL ST. LUKE'S HOSPITAL, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

CHAPEL, LOOKING TOWARDS CHOIR LOFT,
ST. LUKE'S HOSPITAL, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

MAIN FLOOR, PACIFIC GAS AND ELECTRIC CO. ANNEX, SAN FRANCISCO
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BANKING ROOM, BANK OF ITALY, FRESNO
R. F. Felchlin Co., Architects and Engineers

ENTRANCE LOBBY, HOLLOSCHUCKIE CLUB, SAN FRANCISCO
C. A. Meussdorffer, Architect

details while Mr. Simpson superintends the construction work. The firm has completed contracts for some of the best known architects in San Francisco, including Mr. Lewis P. Hobart, C. A. Meussdorffer, M. V. Politeo, Bliss & Faville, Julia Morgan, and others. Contracts recently have been entered into for the following important work: Federal building at Honolulu, to cost $1,000,000; all the houses to be built this year by the Mason-McDuffey Company in St. Francis Wood; the new Bank of Italy building at Market and Powell streets; the San Francisco Savings & Loan building at Twenty-first and Mission streets; Townsend's Candy store; the lobby of the Hotel Manx, and practically all the new school buildings in Fresno.

# Department of Safety

## Conducted in the Interests of the Building Public and With the Co-operation of the California Industrial Accident Commission

## Industrial Safety Values

By WILL J. FRENCH,
Chairman California Industrial Accident Commission

WITHIN the past few years public attention has been directed to human participation in industry and the prevention of needless deaths and injuries. Now that industrial operations are charged with part of the financial cost of accidents, there is given an impetus to the installation of protective devices and the observance of safe practices. The larger view of the problem gives second place to cost and first place to keeping the man at work in possession of all his physical faculties. The labor turn-over as a result of industrial deaths and injuries is considerable, and is not conducive to the best return for the employer, viewed from any standpoint.

California contributes two deaths each day in the year, including Sundays, and approximately 300 injuries each day, to the industrial human toll of the United States. The problem isn't local. It reaches out all over the land and has a direct relation to poverty and distress. Usually the man killed or crippled is in the prime of his productive powers. His loss to industry means an economic and social loss to the community, to say naught of the direct effect on his dependents.

Education is the main factor in vitalizing the "Safety First" doctrine. And it must be remembered that education isn't confined to any particular group of citizens. The employer and employe can both learn. There must be teamwork and legislation and public interest to get the best results. There is plenty to do all around to bring to light the day when it can be truthfully said that all the steps have been taken that can come to human minds.

The Industrial Accident Commission of the State of California congratulates The Architect and Engineer on the introduction in its columns of accident-prevention propaganda. The value of publicity cannot be over-estimated. An article here, or a sentence there, or the clear presentation of a hazard by means of the photographer's art, may save a human life or prevent the crippling of a man.

The Architect and Engineer reaches the hands and eyes of men engaged in constructive enterprises. A plea is presented here for an excess of caution, so that only safe appliances shall be used, that machinery shall be guarded, that good light shall shed its protecting influence over the job, and that it is always remembered that enrichment of citizenship follows a reduction in the number of widows and dependent children.

# Safety Requirements for Loading Roof Trusses During Construction

By J. J. ROSEDALE, Construction Engineer

THAT more precautions must be taken in loading roof trusses during erection is shown by a recent collapse in San Francisco of several roof trusses on a shed, in the course of construction, which resulted in killing one worker and maiming one for life.

This structure collapsed twice, first on a Sunday when fortunately no one was working. The second collapse occurred on a Saturday almost a week later, when the fifty workmen engaged on the job were leaving. No publicity was given the first collapse, and the Department of Safety had no knowledge of it, otherwise the second collapse probably would have been prevented.

Upon investigating this accident it was learned that both failures were due to unsymmetrical loading. The truss that failed, causing the second collapse, was seventy-four feet in span and had no counter or knee bracing. No allowance was made for stiffening and bracing the long trusses of this structure during construction.

The following precautions, if observed, will prevent a recurrence of such a collapse:

1. All long trusses shall be reinforced with counter and knee bracing.

2. No truss or roof member shall be loaded until the truss is completely bolted and all purlins and braces connected.

3. In the case of light trusses having no purlins, temporary struts shall be securely fastened to the top and bottom before the truss is loaded.

4. Concentrated loads placed during construction shall in no case exceed three thousand pounds, or one thousand feet board measure of lumber.

5. For short trusses where the derrick or loading device can distribute the load over the entire truss, the load shall not exceed the total amount of the roof sheathing supported by the member in the finished structure.

6. All sheathing shall be evenly and symmetrically distributed across the entire truss with not more than one-third of the load in the middle of half the truss.

7. For long trusses where the derrick or loading device can not reach over the entire truss, the load shall be distributed across the middle of half the truss and shall not exceed two-thirds of the total amount of the roof sheathing supported by the member in the finished structure. The loads shall at all times be symmetrically placed.

8. All loads shall be evenly spread in laying the roofing on either side of the center line and unsymmetrical loading shall be avoided.

9. If concentrated loads are required after the roofing has been spread, they shall be placed only over the posts at the ends of the trusses.

ROOF TRUSSES OF A SHED CONSIDERABLY OVERLOADED, WHICH CAUSED IT TO COLLAPSE, SAN FRANCISCO

WRECKAGE IN A BOILER ROOM
(The exploded tank with the blown out head is seen at the top center.)

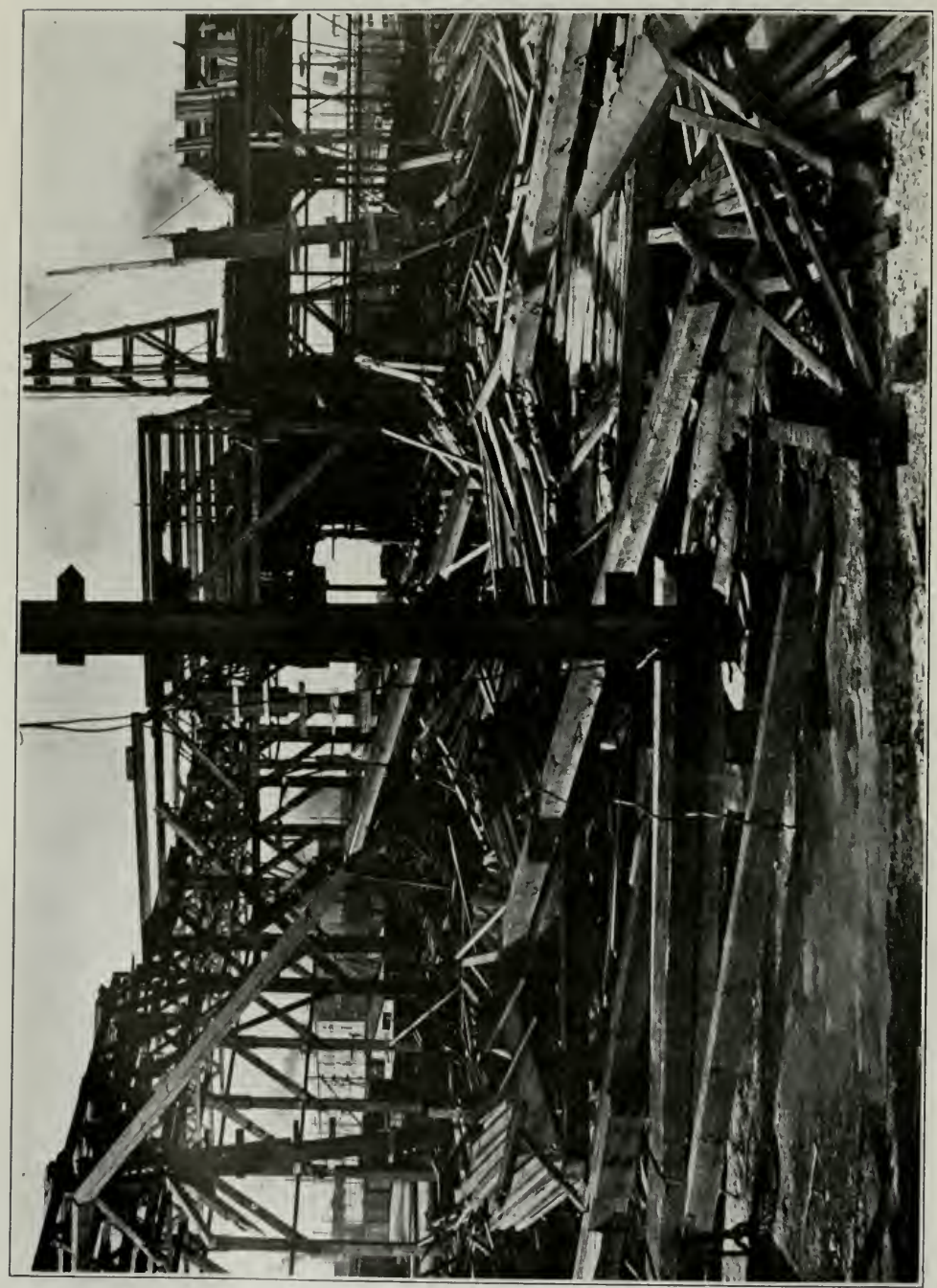
# Failure of a Hot Water Tank

By A. WADE, Boiler Inspector

A RECENT failure of another hot water tank forcibly impresses upon us the necessity for adequate safety devices on water heating tanks and the supervision of same by competent operators. The equipment involved in this accident consisted of a 60-inch return tubular boiler and a tank installed in an hotel. The boiler was used for heating water for domestic purposes, and was connected to the tank in question at the top and bottom and acted merely as a reservoir. The tank was installed near the boiler and practically parallel with it. The tank was about ten feet long and thirty-six inches in diameter. The shell was about three-sixteenths inches thick, and of double riveted lap seam construction. The heads were one-quarter inch thick, one being convex to pressure and the other concave to pressure. The boiler was originally used as a steam generator, but later was connected to the tank and used as mentioned above. The old steam safety valve was left on the boiler. The water was supplied to this system from a city service pipe, in which there was installed a check valve to protect the water meter. It was the practice to fire up this boiler for a short time in the morning and then again in the evening.

At the time of the explosion, it is said, the equipment was in charge of the elevator boy, the regular man being for some reason off duty. It is also said that on the day of the explosion there was practically no hot water to be had in the hotel.

The boiler was fired up in the evening, and about three-quarters of an hour later the explosion occurred. The head of the tank convex to pressure was blown entirely from the shell, some of the rivets tearing through the shell but most of them were pulled through the holes in the shell. The tank was driven horizontally eight or ten feet until the head concave to pressure collided with the end of the steam drum of a B. & W. cross-



SHED AFTER COLLAPSE, WHICH RESULTED IN KILLING ONE WORKER AND MAIMING ONE FOR LIFE, SAN FRANCISCO

drum boiler which was standing near by. The impact was so violent that the head of the tank was very much distorted and a hole sheared through the head of the tank by the end of a pipe plug projecting from the end of the B. & W. boiler. The tank was situated below a concrete floor, a very large portion of which was ruptured by the force of the explosion.

Normally, the tank and boiler are presumed to be filled with water, but it appears to us that at the time of the explosion there must have been a very considerable volume of steam in the tank, otherwise the violence of the explosion can not be accounted for. The tank was of an extremely weak construction, and, in our judgment, not strong enough to safely withstand the city water pressure of fifty pounds.

After the explosion, the safety valve was removed from the boiler and subjected to hydrostatic test of 160 pounds without relieving, this being the highest convenient pressure available.

It was practically impossible to determine just what state of affairs existed to bring about this failure. Examination of the boiler did not reveal any abnormal conditions.

No one was injured, though considerable property damage was done, said to amount to several thousand dollars.

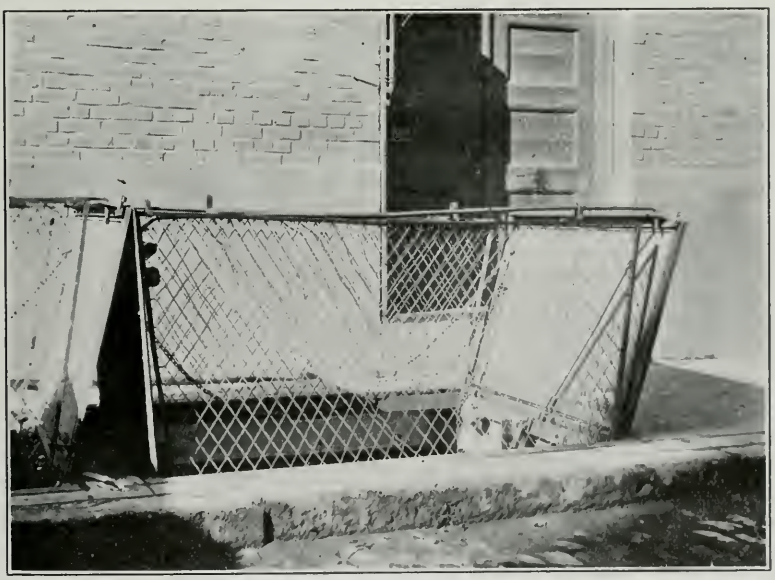
* * *

## Screens for Sidewalk Elevator Doors

By E. C. WOOD, Chief Elevator Inspector

The use of substantial screens or gates in connection with street openings of sidewalk elevators is compulsory. The accompanying photograph shows such a set of screens in place.

Prior to the advent of the Elevator Safety Orders the only form of guard to prevent children and persons who might stumble, from falling into the shaftway, was a bar at each entrance side. The betterment of conditions is apparent.



SCREENS FOR SIDEWALK ELEVATOR DOOR

THE
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INCORPORATED

Founded 1905 by E. M. C. WHITNEY
A. I. WHITNEY - - - *Manager*
FREDERICK W. JONES - - *Editor*

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### *ANNUAL HOUSE NUMBER*

The Annual House Number of The Architect and Engineer will be published in April. Architects who have designed homes and who wish to have their work shown in this number should submit photographs or drawings immediately.

### *FASHIONS IN LIGHTING*

In the old days of lighting chandeliers were put up to stay! They were considered as permanent a part of the house as the fireplace or the kitchen sink. They were called "lighting fixtures." Walls might be repapered, decorations and hangings made over in newer styles, but the ugly chandeliers with their dust-catching whirligigs and spangles remained unchanged, defying the march of time. Even after the advent of electricity, folk continued to look upon the lighting fixtures as something fixed.

But Dame Fashion, in collaboration with the scientists and illuminating engineers, who are constantly making improvements in electric lamps, has now taken charge of the lighting business. She has given us fashions in lights, just as we have fashions in hats and gowns. Lamp shades change from year to year and from season to season. Presumably we may see advertised "the latest Spring creations in boudoir lights."

However, do not be alarmed, the shifting styles in lighting equipment have come as a steady improvement and economy of electric lamps. Each change means that the householder will have more or better light or cheaper light—and frequently such a change means all three.

---

### *STREET TREES*

Providing shade on city streets is as much a municipal function as providing lights or sidewalks, and should therefore be cared for by public officials, says one of the horticulturists of the United States Department of Agriculture, in a recent bulletin on "Street Trees." Trees on well shaded streets not only contribute enjoyment but health by transpiring moisture and producing a restful effect on eyes and nerves. Good shade adds to the value of adjoining properties. In fact, even in pictures, a house with trees and shrubbery will attract a buyer when the same structure without them would be disregarded.

Mixed plantings of different kinds of trees are not as pleasing and effective as the use of a single species for considerable distances. On the other hand, monotony will result if the same species is used for an entire town or section. The varieties of trees suitable for city planting are not many, so all native to the section may be used, usually assigning one variety for a long stretch of street. Street trees are often planted too close together for the mature tree to thrive, a common practice being to plant them thirty-five feet apart although fifty or sixty feet would be ultimately a better distance.

A street tree must have healthy foliage that withstands dust and smoke, a root system adapted to unusual soil conditions, restricted feeding area and root pruning where street improvements are made. In the smoky heart of a city the ailanthus, or tree of heaven, will probably thrive when nearly all other kinds fail. So also may the sycamore and plane. These are suitable for nearly all sections of this country. The maple is not as suitable a tree for street planting as many suppose because it is not sufficiently rugged except under suburban conditions.

The top of a street tree should be in proportion to the width of the street on which it stands, and should be of open growth without being too spreading. Narrow streets should be planted with columnar trees like the Lombardy poplar, or sometimes with small trees; broad streets with spreading trees like oaks or elms. The oak is designated as best for nearly every section of the country because of its hardness and beauty.

### *THE TIME HAS ARRIVED TO PUT ON THE BRAKES*

Anent the movement throughout the country to stabilize prices we print the following letter from Mr. B. J. Williams, director of sales, Paraffine Companies, Inc., in the belief that it may encourage other large corporations like the Paraffine Companies to take similar action. The accompanying letter not only shows present tendencies and the inevitable outcome of their continued tolerance, but it points out the duty of the manufacturer, merchant, farmer, property owner, and, in fact, of every citizen, in these unsettled times:

To the Trade—

Conditions affecting the roofing industry and allied lines are abnormal and puzzling in the extreme. On the one hand the demand from the trade is larger than ever before and greatly in excess of the ability of manufacturers to supply. On the other hand, raw materials are very scarce—almost unobtainable, with prices at unheard of levels. Rags, for example, are now selling at $85 per ton, an advance of $30 per ton during the past six months.

The situation in the East is even more acute than on the Pacific Coast, some manufacturers having advanced prices three different times during January. Others have withdrawn prices entirely. Others have called in their salesmen, while a number are booking orders only for shipment at their convenience and at prices in effect when shipment is made. These Eastern conditions are already being reflected on this Coast in the form of a greatly increased demand, and with advancing prices on the part of some manufacturers.

As to the advisability—indeed the necessity—of keeping prices down in general, there can be no argument. We, in common with thoughtful and patriotic citizens everywhere, recognize that prices cannot go higher without *extreme danger*.

How to meet the situation is the great question. Anticipating, in some degree at least, the conditions that would follow as a result of the restriction of building during the war, this company practically rebuilt its roofing plant at a cost of more than a million dollars. These improvements increased its output over 100 per cent, making it today the most modern, the most efficient and the largest single roofing plant in the world.

As a result of these increased facilities, our manufacturing costs are considerably lower than those of most manufacturers. Because of this fact and our sincere desire to assist in stabilizing prices generally, it is our purpose not to take advantage of prevailing conditions to exact the limit in prices. In other words, we will give our customers the benefit of our increased facilities and the stocks of raw materials which we have on hand, and will advance prices *only* when our present large stocks are exhausted and we have to replace at still higher prices.

In the meantime, we advise our customers not to speculate, but to buy to cover their *immediate requirements only*. If the

building in sight in your city or community indicates a demand on you during the next three months for 100 squares, 500 squares, or a carload of roofing, *buy that quantity and no more*, but place your order *now* to insure delivery of the goods when you need them.

We urge also that our customers in turn do not attempt to secure from their customers the highest prices obtainable, but that they be satisfied with a *fair and reasonable profit*, because, in our opinion, it is only by so doing that our mutual interests and those of the country at large can be conserved.

## Architect Invents Automatic Seating Device for Moving Picture Theatres

By VERNON W. HOUGHTON *

THE Houghton Automatic Seating Device has been designed to eliminate the annoyance to patrons of moving picture theatres of persons climbing over and passing in front of occupants of seats in going to and leaving seats during a performance.

The installation of this seating device in a theatre will require provision for only three aisles, a center or entrance aisle and two side or exit aisles. The operation of the seat is automatic, requiring no attention from the occupant either before occupancy or after leaving.

The principal feature of the device is: its operation eliminates the unoccupied seats between any occupied seat and the exit aisle. The operation of the automatic seat commences with the occupancy of a seat in a row of chairs—for thereafter every unoccupied seat between the occupied one and the exit aisle automatically folds up, is noiselessly lowered to a horizontal conveying device under the floor, and the remaining seats automatically shift their position with their occupant, thereby closing up the gap in the row made by the seat which dropped out of position; the seats moving towards the exit aisles at each operation.

This motion of the occupied seats towards the exit aisles allows the occupant, upon his having seen a complete performance, to step from his seat into the exit aisle, his seat folding up upon his leaving it, being lowered to the horizontal conveying device, and thence being returned to the original position at the entrance aisle, ready for occupancy by the incoming patrons. Upon the elimination of this last seat at the exit aisle, the next adjoining seats automatically move over and the next patron is then occupying a position adjoining the exit aisle, and upon his leaving, the action of the successive seats is repeated.

By the installation of this seating device all unoccupied chairs are immediately adjacent the entrance aisle and the occupied seats are gradually moved towards the exit aisle. The movement of the seat while occupied is very gradual, and will be hardly perceptible to the occupant; the floor immediately in front of the seat is so arranged that its motion is similar to the movement of the seat, and therefore the feet of the occupant of the seat are undisturbed. At will, or at the termination of the last evening performance, the operator may control the reappearance of the seats by simply turning a switch, which will permit the seats, as soon as the occupant leaves, to disappear, not to return, thereby allowing clear aisle width between seats, permitting the theatre to be readily emptied.

At the openings of the theatre the seats are locked in position, similar to any theatre seating, and the patrons all enter the theatre along this entrance aisle, filling the seats towards the exit aisles; when the performance starts, the operator or other designated official of the management, by turning a switch, starts the motor which furnishes power to the mechanically operated gearing, thereby unlocking the seats, and at this instant all unoccupied seats between the occupied seats and the exit aisle are eliminated from the row and become available for occupancy immediately adjacent to the entrance aisle, the occupants of the other seats being gradually moved towards the exit aisle.

In motion picture theatres single, unoccupied seats scattered throughout the audience are hard to find by the ushers, and if so located, any person attempting to reach them are compelled to pass directly in front of other patrons, thereby causing them much annoyance.

The Automatic Seating Device is noiseless in operation and its installation will enable the theatres to keep pace with the wonderful strides the picture promoters are making in producing almost-realities upon the screen.

The device is the invention of the writer, who has made application for patents.

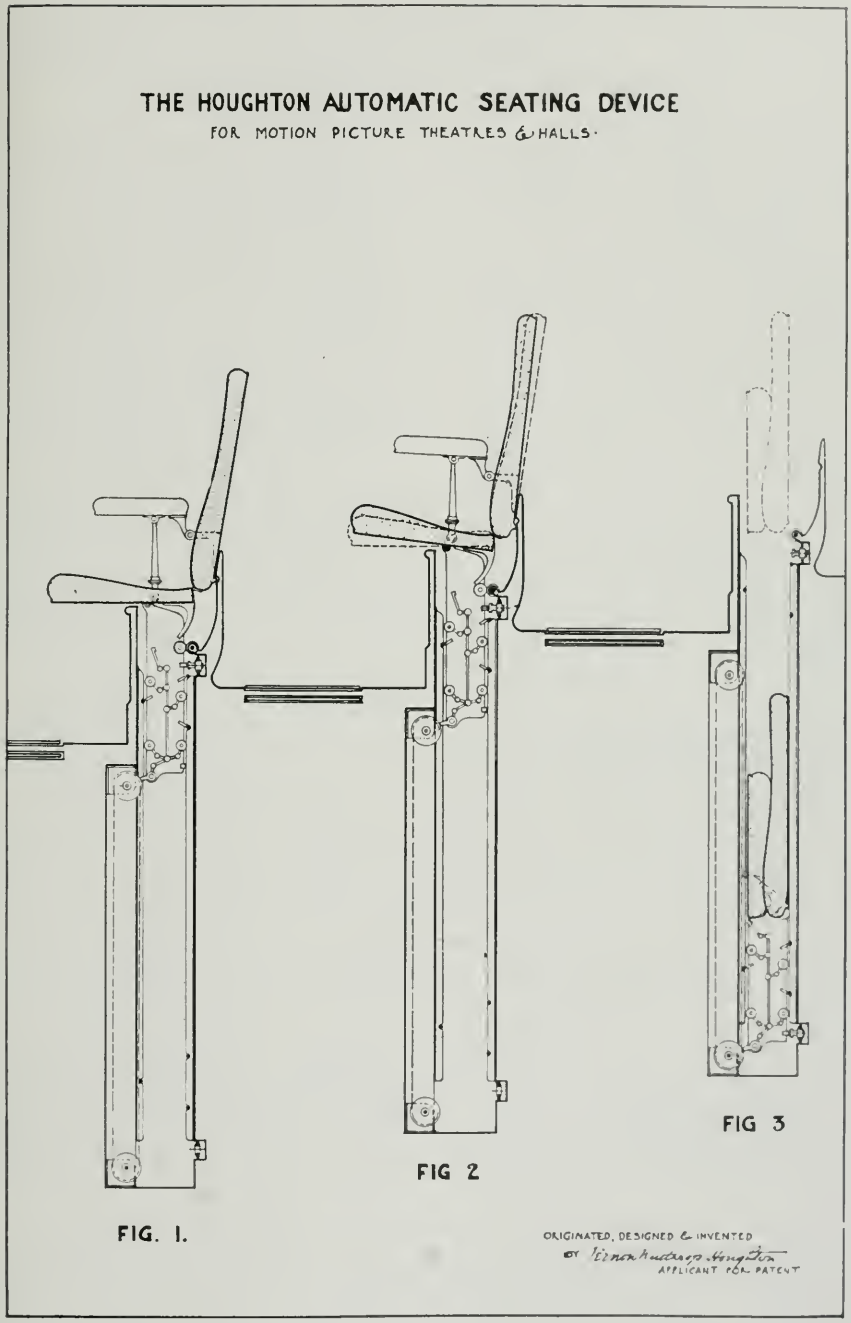
* 425 Kearny street, San Francisco.

## Oakland Architects Busy

Messrs. Reed and Corlett, architects, of Oakland, have completed plans for a $75,000 bank building at Santa Rosa, also alterations to a bank in St. Helena, and for considerable residence work in Oakland and vicinity. The same architects are also busy on making drawings of a $400,000 hospital.

## Benicia Arsenal Work Approved

Word comes from Washington that plans have been approved by the War Department for an artillery store house to cost $131,000, and a new quartermaster's warehouse to cost $20,000, and the construction department has been directed to advertise for bids at once.


THE HOUGHTON AUTOMATIC SEATING DEVICE
FOR MOTION PICTURE THEATRES & HALLS.
FIG. 1.
FIG 2
FIG 3
ORIGINATED, DESIGNED & INVENTED
BY Elmer Murray Houghton
APPLICANT FOR PATENT

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# With the Architects

## Building Reports and Personal Mention of Interest to the Profession

### Chapter Committees

Mr. Edwin Bergstrom, president of Southern California Chapter, A. I. A., announces the appointment of the following committees for the current year:

Ethics and Practice—S. T. Norton, John Parkinson, O. W. Morgan, Stiles O. Clements, H. H. Martin, R. Requa and W. Soule.

Competitions—John C. Austin, W. A. O. Munsell, J. A. Walls, Ross Montgomery, R. D. Johnson, W. Brewster and H. Cody.

Legislation—J. J. Backus, J. E. Allison, H. M. Patterson, P. A. Eisen, John P. Krempel, J. J. Blick, J. T. Vawter, W. Soule, and W. S. Hebbard.

Membership—A. F. Rosenheim, S. R. Burns, W. Wilson, Paul Van Trees, T. Fitzhugh, H. Frohman, H. L. Gay and W. Brewster.

Education—R. D. Farquhar, F. P. Davis, Geo. Wyman, J. Woolett, M. C. Montgomery, L. J. Gill, Garrett Van Pelt, W. Soule.

Contracts and Specifications—Alfred W. Rea, Harrison Albright, A. C. Martin, Frank Schaefer, T. F. Power, L. H. Hibbard, R. F. Train, and P. O. Wright.

Public Information—W. E. Erkes, W. J. Dodd, F. D. Hudson, F. L. Stiff, C. F. Skilling, R. E. Williams, C. S. Greene, R. Requa and W. Brewster.

City Planning—H. F. Withey, Octavius Morgan, Myron Hunt, Carleton M. Winslow, D. C. Allison, Alex Curlett and A. B. Benton.

Building Contest—A. F. Rosenheim, Alfred W. Rea and D. C. Allison.

Medal Awards—R. D. Farquhar, R. D. Johnson, W. Soule, R. Requa and H. M. Patterson.

Technical Committee of Chamber of Commerce—Myron Hunt and A. F. Rosenheim.

### Personal

Mr. Ernest J. Kump, Fresno architect, is recuperating from an injury to his right arm, sustained in an attempt to crank his automobile. The accident occurred near Coalinga, and Mr. Kump being alone, was forced to walk five miles for medical assistance.

Messrs. Weeks and Day and Reid Bros. have opened offices in the James Flood building, San Francisco, for handling the plans of the big theatre and office building which Marcus Leow and his associates are to build in Los Angeles at a cost of $1,250,000.

Mr. Ernest Flores, well known to the San Francisco architectural profession, has formed a partnership under the firm name of Flores and Miller. James Campbell building, Honolulu. Mr. Flores has the well wishes of his many friends.

Professor John W. Gregg, of the University of California, has been elected to membership in the National Conference on City Planning.

The firm of Wright and Sala, architects, Stockton, has dissolved. Mr. Wright retains offices in the Bank of Italy building and Mr. Peter L. Sala has moved to the Wilhoit building.

Mr. Herman Barth has moved into very attractive new offices in the Phelan building, San Francisco.

Mr. Washington J. Miller, San Francisco architect, has recovered from a severe attack of the influenza.

Messrs. T. Paterson Ross and A. Coxhead, San Francisco architects, were recent Los Angeles visitors.

Mr. Ferdinand Davis, pioneer architect of Pomona, recently celebrated his eightieth birthday.

### They Read the Architect and Engineer

Plans have been prepared by Mr. Warren Skillings, architect of San Jose, for a picturesque Spanish home for Mrs. M. E. Faull, on Ocean boulevard, Pacific Grove.

Mr. Skillings recently received a commission to design a $15,000 home for a Berkeley woman through the publication of one of his houses in the Architect and Engineer. Mr. Skillings says they (meaning the layman as well as the professional man) surely read this magazine.

### Bank to Erect Building

Messrs. Wolfe and Higgins, Auzerais building, San Jose, are preparing plans for a bank building, stores and moving picture theatre, to be built at Campbell, near San Jose, for the Growers National Bank. Forty thousand dollars will be expended on the improvements. The same architects have prepared plans for a brick storage battery station at Santa Clara, and for a number of attractive residences and bungalows in San Jose.

### College Buildings

Mr. Robert H. Orr, 1301 Van Nuys building, Los Angeles, has been commissioned to prepare plans for a group of buildings to be built opposite the State Normal School in Los Angeles for the California School of Christianity. There will be an administration building, two dormitories, library, recitation hall, chapel, power house and heating plant. Construction will be largely of brick and terra cotta.

### Prospects

San Francisco—Messrs. Louis Sloss and E. R. Lilienthal have purchased the lot on the north line of Pine street, east of Van Ness avenue, 50x86 feet, which, with a second lot, 116x137 feet, gives them over 20,500 square feet of ground area with a frontage on both Van Ness avenue and Pine street. As soon as the present short leases expire, Sloss and Lilienthal will erect a large automobile building.

San Jose—An option has been taken by the James A. Clayton Company, San Jose, for a client, on the Knox block at First and Santa Clara streets, as a site for a ten-story class "A" office building. The lot is 137½ feet square and is the most important business corner in the city.

Stockton—Bonds have been voted for $750,000 for new schools and additions to present school buildings at Stockton. Lodi has also voted $60,000 bonds for a new school building.

### Two Commercial Garages

Messrs. Sidney B. and Noble Newsom, now associated, with offices in the Nevada Bank building, have prepared plans for a $22,000 commercial garage to be built in Richmond by Mr. James M. Mullen, and for a large brick garage at Castro Valley for Mr. R. F. Bucknam. The latter will also build an eight-room residence and dairy building from plans by the same architects.

### $40,000 Apartment House

Plans are being prepared by Messrs. Fabre and Thayer, 110 Sutter street, San Francisco, for a $40,000 frame apartment house to be erected on Pine street between Jones and Leavenworth streets, San Francisco. There will be six four-room apartments and two three-room apartments.

### Berkeley Architect Busy

Recent work in the office of Mr. J. W. Plachek, architect of Berkeley, includes an $18,000 apartment house for Miss Marie Boutin, three brick stores to cost $12,000 for Mr. John Frenner, and a $17,000 residence for Mr. H. C. McCauley.

### Group of School Buildings

Messrs. Jeffery and Schaefer, Kerckhoff building, Los Angeles, are preparing plans for a group of school buildings for the Monte Bello School District, to cost $150,000.

### Addition to Mission Inn

A three-story concrete addition is to be built at once to the Mission Inn at Riverside, Mr. Frank Miller, proprietor. Mr. Arthur B. Benton is the architect.

### To Enlarge Sacramento Hotels

A one-story addition to the Travelers Hotel at Sacramento is to be built at an estimated cost of $150,000. The addition will provide a large ball room and social room. It is announced that the Travelers Hotel Company, under reorganization, will erect a chain of hotels bearing the name in Superior California cities. Mr. T. A. Franker is the new president and general manager, succeeding Mr. J. M. Henderson, Jr.

### Theatre and Office Building

A class "A" theatre and office building is being designed by Mr. Edwin Bergstrom, architect, Citizens National Bank Building, Los Angeles, for the Hill Street Fireproof Building Company. Mr. Sid Grauman will lease the theatre, which will seat 4,000 persons. The investment will total close to $2,000,000.

### Mercantile Building

Plans are being prepared by Messrs. Ralph Wyckoff and Hugh C. White, of Salinas, for a two-story brick or concrete mercantile and office building for the Farmers Mercantile Company of Salinas. Besides a large store there will be twenty offices in the building, which will cost $100,000.

### Concrete Church

Messrs. Shea and Minton, architects in the Marston building, San Francisco, have prepared plans for a reinforced concrete church and rectory to replace the edifice recently destroyed by fire at Centerville. About $60,000 will be expended on the improvements.

### Two Hospitals Planned

Messrs. Beezer Bros., Seaboard Building, Seattle, have been commissioned to prepare plans for two large fireproof hospital buildings for the Sisters of St. Joseph. One will be located at Lewistown, Idaho, and the other, Pasco, Wash. They will represent a total outlay of $300,000.

### Court House Addition

An addition is to be built to the Multnomah County court house, at Portland, from plans by Mr. Morris H. Whitehouse, architect in the Railway Exchange Building, Portland.

### Warehouses for the Espey

Messrs. Bliss and Faville, Balboa building, San Francisco, are preparing plans for a group of large warehouses to be erected in San Francisco for the Southern Pacific Company.

### $50,000 Residence

Mr. W. H. Crim, Jr., is preparing plans for a $50,000 house to be erected by a client in Piedmont Acres, Alameda County.

### Recognition for Mr. Wm. H. Weeks.

It must be gratifying to Mr. William H. Weeks, San Francisco architect, to receive so many requests from all sections of the globe for photographs of some of his more recent school houses. The appeals have come from publishers of technical and other magazines of national circulation, who have read of Mr. Weeks' signal success in concrete design.

The December, 1919 number of Concrete and Constructional Engineering, published monthly in London, England, contains photographs and plans of three of Mr. Weeks' most recent and most successful school houses—Santa Cruz, Healdsburg and Watsonville. Accompanying the plates is a page and a half of text matter under the heading, "Some Concrete School Buildings in California." Referring to the type of construction—reinforced concrete—the writer of the article goes on to say that "this type of building has proved very satisfactory on the Pacific Coast, and some beautiful effects have been obtained by the use of colors. Furthermore, reinforced concrete buildings have been found to afford greater resistance to the earthquake shocks to which this coast is subject."

Mr. Weeks comes in for further recognition in the February-March Bulletin of the Portland Cement Association, which features the entrance gate of the new Woodland Primary School on the cover page, while inside the book is an article by Mr. Weeks on "Concrete Schools in California." The Watsonville and Healdsburg schools are described and illustrated in detail. Another publication to give Mr. Weeks' recent work considerable space is the School Board Journal, published in Milwaukee, Wisconsin.

### Architects Move

Mr. E. C. Hemmings, from the Strand Theatre building, Sacramento, to the Ochsner building, in the same city.

Mr. A. J. Stern, from 2852 California street, San Francisco, to 671 Seventh avenue, San Francisco.

Mr. Otto Neher, from 708 Garland building, Los Angeles, to 3177 North Fifth street, Los Angeles.

Mr. Vernon W. Houghton, from the Humboldt Bank building, San Francisco, to 425 Kearny street, San Francisco.

Mr. A. Merrill Bowser, from the office of Mr. C. O. Clauson to the office of Messrs. Glass and Buetner, Hearst building, San Francisco.

### Stores Instead of Skyscraper

Mr. William H. Fitzhugh, owner of the property at Post and Powell streets, San Francisco, has decided to erect nine stores on the site instead of a twelve-story office building. Bakewell and Brown are preparing the plans.

### Tourtellotte & Hummel Busy

Tourtellotte and Hummel, architects, McKay building, Portland, and also of Boise, Idaho, have recently received instructions to prepare plans for a number of new buildings, including a one-story and basement building for the Idaho Candy Co.; a nurses' home for the St. Alfonsus hospital; additions to the Sisters of St. Theresa Academy to cost $90,000; a $160,000 addition to the Dewey Hotel at Knappa, Idaho, and a $20,000 church for the Congregational denomination at New Plymouth, and a $70,000 boys' dormitory at Gooding College, Gooding, Idaho.

### It Is Now Losekann & Clowdsley

Editor The Architect and Engineer,
San Francisco, California.

I wish to enter subscription to The Architect and Engineer, for it is a magazine that I shall be glad to have because of the local interest and because of its many excellent articles and cuts.

I have formed a partnership with Mr. Joseph Losekann, a Stockton architect, and we have several jobs in course of being figured. Among these are a four-story brick hotel and rooming house for the Lafayette Investment Co., to cost about $65,000; a two-story brick store and office building for the Kintai Do Co., to cost about $25,000; a two-story brick store and rooming house for Mr. J. P. Gilbean of Lodi, to cost about $35,000; and a house of hollow tile with terra cotta tile roof, for Mr. Horton Kile of Thornton, to cost $10,000.

Very truly yours,

J. U. Clowdsley.

### Oakland Automobile Buildings

Mr. Clay N. Burrell, architect of Oakland, has prepared plans for a large auto emporium for Mr. W. M. Greuner, to be built at Broadway and Moss avenue, and for an auto sales building on Broadway, Oakland, for Mr. H. F. Adams. The total cost of the two buildings will be in excess of $75,000.

### Berkeley Hotel Changes

Extensive alterations are to be made to the lobby of the Hotel Whitecotton in Berkeley from plans by Mr. Alfred Kuhn. A contract for the candy, ice cream and soda fixtures has been let to the Mullen Manufacturing Company for approximately $20,000.

### Two Apartment Houses

Mr. J. F. Dunn, Phelan building, San Francisco, has prepared plans for two apartment houses, one to cost $25,000 and to be built on Geary street near Hyde, and the other to cost $35,000 and to be erected on Hyde near Geary street, San Francisco.

### $400,000 Hospital

Mr. Frederick H. Meyer, architect, of San Francisco, has been commissioned to prepare plans for the new White Hospital in Sacramento. The structure will have accommodations for 150 patients and will cost $400,000. Construction will be of reinforced concrete.

# Most Notable Examples of Architecture in Los Angeles

Los Angeles, California, March 3, 1920.

Editor The Architect and Engineer,
San Francisco, California.—

Owing to the illness of one of the architects appointed to serve on the jury in connection with the contest to determine the most notable examples of architecture, etc., in Los Angeles, and the fact that another architect, the chairman of the jury, finds it impossible to come here from Portland before the first week of April, we find it necessary to postpone the closing date of the contest from February 22nd to April 1st, 1920, and the date of the jury report from March 1st to April 12th.

In view of these changes and our great desire to retain the interest of the general public, we would thank you to make announcement in the next issue of your paper. We would greatly appreciate your assistance to this extent.

It might also be stated that the prizes, which will be from twelve to fifteen in number, will be announced in due course, so that those who desire to participate in the contest by submitting lists of nominations of the buildings they wish brought to the attention of the jury will know what they are working for.

Again thanking you on behalf of the architects for your kind co-operation in a matter which we believe will prove of considerable value from an educational standpoint, we are,

Very truly yours,

CONTEST COMMITTEE,
D. C. Allison,
Alfred W. Rea.
A. F. Rosenheim, Chairman.

### Automobile Buildings

Mr. S. Heiman, Mechanic's Institute building, San Francisco, besides preparing plans for the Pioneer Automobile Company's new $250,000 building, has been commissioned to design a two-story reinforced concrete auto electrical equipment building for Mr. William F. Dunn. The structure will occupy the southwest corner of Sutter and Larkin streets, San Francisco, and will cost $75,000.

### K. of C. Building

Mr. Leo J. Devlin, architect in the Pacific building, San Francisco, is preparing plans for a three-story frame lodge building for the Knights of Columbus of Vallejo. There will be a gymnasium, swimming pool, club rooms, hall, etc. About $75,000 will be expended. Mr. Devlin will also design the new buildings for Menlo Park Seminary at Los Altos.

### Four $1,000,000 Theatres

Mr. G. A. Lansburgh has let a contract to Messrs. MacDonald and Kahn to build Marcus Loew's new Metropolitan theatre at Market and Taylor streets, San Francisco, for approximately $1,000,000. Mr. Lansburgh's office is also busy on plans for new Orpheum theatres in San Francisco, Los Angeles and Oakland.

### Two Large Washington Projects

Final approval has been given by the Associated Student Body of the University of Washington Board of Control to Messrs. Bebb and Gould, architects, in the Securities building, Seattle, Washington, to plan and supervise the construction of the new $600,000 Memorial stadium.

Seattle is to have a building for the medical profession similar to the Medical building in Portland. Bebb and Gould, architects, in the Securities building, have received instructions to proceed with plans for a modern eight-story building to cost $450,000.

### Architect Dickey Returns

Mr. C. W. Dickey, who is to be in charge of Oakland's new school building program, has returned from the East where he spent a month gathering new ideas on schoolhouse construction and standardized specification writing.

### Certificate to Practice

At the regular monthly meeting of the California State Board of Architecture, held February 24th, Mr. Fred W. Ouandt of 984 Ashbury street, San Francisco, was granted a certificate to practice architecture in California.

# With the Engineers

## Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

### Notes of Interest to Engineering Societies

The Board of Direction of the American Society of Civil Engineers will meet in Los Angeles in July, the exact date to be fixed later. This announcement was made by Mr. H. Hawgood, member of the board, at the meeting of the Southern California Association of Members of the American Society of Civil Engineers, Feb. 11th. Mr. Hawgood explained that the action of the board in selecting Houston, Tex., as the place for holding the next annual convention of the parent society, was due to a desire to stimulate interest and to increase the membership in the South.

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A resolution adopted by the Joint Council of the Engineering Societies of San Francisco, urging the engineers to support Herbert C. Hoover for president was ordered modified in accordance with the requirements of the Southern California Association and was endorsed as the sentiment of the meeting.

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The American Association of Engineers, organized in 1915, is now the largest engineering society in America. A year ago it had 2500 members and the membership now is 12,000 with several thousand applications awaiting action, according to reports from national headquarters. There are now 105 chapters and 45 clubs.

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In its fortnightly engineering service review, issued under date of Feb. 13th, from national headquarters, the American Association of Engineers says:

Analysis of the present market for engineering services shows the underlying causes of the extremely great demand to be:

First, an urgent and insistent need for professional technical services from the more active industrial centers.

Second, reduced number of engineers caused by many competent professional men leaving for other fields where remuneration is more satisfactory.

There is every indication that the demand will continue and in all probability increase with the advent of open weather and increased construction. It is improbable that salaries of engineers will be stabilized soon, for they must be increased to correspond with the cost of necessities.

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### Dr. C. W. Hunt Retires

Dr. Charles Warren Hunt for the past twenty-five years secretary of the American Society of Civil Engineers, has asked to be relieved from active duty. The Board of Direction on January 21st passed resolutions appointing him to the newly created office of Secretary Emeritus, and granted him leave of absence of six months, owing to the condition of his health. The resolutions follow:

"Whereas, Dr. Charles Warren Hunt, after twenty-five years of devoted and efficient service as secretary of the American Society of Civil Engineers, during which he has contributed to its upbuilding and prosperity to a degree which places the society under lasting obligation to him, has indicated his desire to be relieved from active duty, and

"Whereas, he possesses an intimate knowledge of the business of the society and an extensive acquaintance with its membership which render his advice and assistance of the greatest value to the society and its Board of Direction, the benefit of which they can ill afford to lose, therefore, be it

"Resolved, that Dr. Charles Warren Hunt be and is hereby appointed Secretary Emeritus of the American Society of Civil Engineers at a salary of $9,000 for the coming year, and a salary of $6,000 per annum thereafter with such duties as the Board of Direction may assign to him."

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### Passing of Two Engineers

Mr. George M. Herron, chief engineer for Messrs. Hunter and Hudson, mechanical engineers, with offices in the Rialto building, San Francisco, died suddenly at Palo Alto, February 11th from pneumonia. He was 43 years old and a native of Lake county. Graduated from Stanford in 1905, he was assistant engineer for the Standard Oil Company and other engineering enterprises, and designed and built the big raisin packing plant just completed in Fresno.

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Influenza proved fatal to Mr. A. V. Saph, a well known San Francisco engineer, who for some time maintained offices in the Rialto building. He was recognized as a leading engineer in reinforced concrete construction on the Pacific Coast. At one time he was associated with Mr. John B. Leonard in designing some of the first concrete bridges in California. Mr. Saph was a native of San Jose and was 48 years of age. He was a member of Durant lodge of Masons in Berkeley, and of the various technical societies.

## Greatest Road Building Campaign in the World's History

By N. W. Dougherty,

*Professor of Civil Engineering, University of Tennessee.*

THE United States is entering upon the greatest construction program for highways ever known to any nation at any previous time. During the next five years there will be at the disposal of the state highway departments a grand total of as much as $3,000,000,000. The program as outlined for the year 1920 looks to the expenditure of more than $600,000,000. At no time in the history of the world have such vast sums of money been made available for any particular line of work. The greatest era of railroad construction came between the years of 1879 and 1883 and the expenditure was something like $800,000,000, and this under the five-year period. During that time some 40,000 miles of railroad were constructed at a cost of about $20,000 per mile. Considering the advance in price of labor and engineering material as being 100 per cent, still the actual amount of work to be done now is far above that which was done during this great period of railroad construction.

When any state enters upon such a construction program great engineering and transportation difficulties will arise. Vast amounts of materials must be moved from places of origin to the places where they are used in construction. This will make a very great demand upon our present overburdened railroad system.

Plans should be laid far in advance in order that materials may be placed on the ground by the time construction begins. The United States is attempting to assist the state highway departments as much as possible in the handling of materials. Large numbers of army trucks and tractors have been placed in the hands of county and state officials, and these may be used in motor truck transportation. A need, however, will be strongly felt in this direction. Trained operators must be secured to care for these vehicles and many of the counties will find it necessary to install a motor transportation department.

The problem of obtaining a sufficient amount of labor to do more work than the railroads did during their great construction program will be a serious one. Forethought must be used to prevent the diverting of labor from other needed industries and placing it upon the highway program. The possibility of competitive bidding looms up when such vast amounts of money are to be expended.

With the prospect of large amounts of money being expended on highway construction, the large construction concerns are entering the highway field. In order that they may be attracted to it large pieces of work must be prepared and offered for bids at the same time or at short intervals. Large construction concerns cannot take small pieces of work and do them effectively. The entrance of large construction companies into the highway field will relieve the situation to a considerable extent. Otherwise competitive bidding between the counties might make a serious problem in getting contractors into the work.

With the need of 200 engineers in the state of Tennessee alone the problem is apt to be acute. A highway engineer cannot be made over night. He should have a four years' training in a university with considerable practical experience in highway construction and supervision. We cannot wait until the men are graduated from the universities. We must have men trained in the fundamentals at the earliest possible moment.

In order to meet this demand the universities are putting in short courses in highway engineering to be given, during the dull season of the year, to those men who expect to enter into highway work. —Roadmaker, Excavator and Grader.

## California Counties Vote Millions for Good Roads

In addition to the $40,000,000 voted by the State of California for building good roads, eleven counties have voted sums ranging from $500,000 to $4,800,000 to put and keep the highways within their borders in repair. The total for the eleven counties is $18,874,000. The totals voted by the several counties follows.

| | |
|---|---|
| Fresno | $ 4,800,000 |
| Sonoma | 1,640,000 |
| Napa | 500,000 |
| Santa Cruz | 924,000 |
| San Luis Obispo | 1,500,000 |
| Contra Costa | 2,600,000 |
| Yolo | 1,000,000 |
| Sutter | 810,000 |
| Butte | 1,800,000 |
| Imperial | 1,000,000 |
| San Diego | 2,300,000 |
| Total | $18,874,000 |

## "Doughnut" Houses

An Oakland newspaper publishes the following:

"Doughnut" houses, built of hollow tile, the invention of A. A. Marshall, Oakland builder, promise an innovation in construction. Marshall has just obtained a special permit from the city to erect a structure, the first of its kind on the Coast, on Fifty fourth street.

The tile, according to Marshall, permits the building of houses at approximately 20 per cent less expense than ordinary building costs. The hole in the tiling is filled with concrete after the tiles are in place, making the whole rigid. The plaster is put on without laths.

The "doughnut" house is being tried as an experiment for the benefit of east-bay builders, who have become panicy over the tremendous increase in the cost of lumber and wood lath.

# The Contractor

BUILDING CONSTRUCTION, BRIDGES AND ROAD WORK

## Quantity Survey—The Case Against Payment for Estimating*

CONTRACTORS are becoming restless. They are seeking relief from conditions that are recognized as unfavorable, and the very fact of the creation of a national organization shows that they are beginning to reason about the causes of discontent and to study how to improve matters.

One measure of relief proposed is the demand for payment for estimating. Another receiving considerable attention is the introduction of the Quantity Surveyor to supply uniform quantities as the basis of all bids. Before discussing them it will be well to consider some of the fundamental economic features of construction.

It is the building owner that eventually pays for all expense. The overhead expense of architects and contractors which covers miscellaneous expense of all sorts on projects that do not eventuate in contracts for them is collected on the jobs for which they do receive contracts. Building owners, therefore, pay indirectly for all estimating and quantity expense.

Again, there should be a sharp distinction drawn between estimating expense and quantity expense. Estimating expense will mean the expense of determining labor and material prices and everything else that enters into pricing up quantities of work to be done, except the expense for the preparation of quantities. This is considered as distinct from estimating expense.

Estimating is a part of a contractor's work that by no method can be satisfactorily delegated to any outsider. No method of payment for it can in any way relieve him of the necessity of doing it for himself and for assuming full responsibility for the prices he offers for doing the various kinds of work required under any contract. There is undoubtedly considerable confusion among contractors in discussing payment for estimating due to its close relation to quantity preparation, and by many it is considered as covering both matters. There can be no escape from estimating expense; but there are ways which will be explained to minimize quantity expense in a very desirable and satisfactory manner.

There is a sad misconception or disregard of "overhead" on the part of many contractors. Some say, for example, that estimating expense comes out of "profit." If a contractor does not know what percentage of his receipts goes to pay for rent, insurance, interest, salaries for estimators, etc., or doesn't care to account for these items in his estimates as "overhead," it is a matter for his choice and decision. But if he does not account for his "overhead" as a separate item in his bids, he should not complain if his so-called "profit" is reduced by payment of such items.

There must be competition. Anything permitting or leading to the development of a Building Trust will be disastrous to the interests of the majority. On Cost Plus Work even there should be competition for a Percentage Contract among acceptable builders to demonstrate their ability to give service. Service can only be measured ultimately in terms of cost. On the other hand, competition can only exist when uniform requirements are made the basis of competition. Anything else is speculation. Constructive ability and management should be the winning and determining factor. Until they are and until a generally accepted minimum percentage of profit is demanded by all, the contractor's existence will continue to be a stormy one.

Anything that decreases a contractor's "overhead" or allows him to figure "costs" more accurately, or gives him better opportunity to demonstrate his superior constructive and executive ability, without increasing cost to the building owner, is a good thing for both parties.

Direct payment for estimating would not reduce a contractor's expense for same. His overhead would not be re-

* A report prepared for the Committee on Methods by Mr. William Graves Smith, president of the Quantity Survey Company, 17 West Forty-fifth street, New York City, and published in the Monthly Bulletin of the Associated General Contractors of America.

duced, for a contractor would not be furnished anything that would reduce his labor or lessen his responsibility. It would simply change the method of reimbursement and shift the burden of expense. Contractors that properly treat "overhead" as something separate from "profit" know that they collect in "overhead" all of their estimating expense from the jobs they win. The building owner that gives them a contract pays for the estimating on his own job and on an average for about fifteen or twenty others that his contractor has bid on and lost, or which did not go ahead.

This may seem a hardship to building owners, but looked at from this standpoint, it is not a hardship to contractors. There are, however, many reasons why estimating expense cannot be satisfactorily paid for job by job with any hope of the building owner reaping any benefit financially or otherwise.

In other business, estimating expense or pricing is recovered as an overhead item. Take for example the simple transaction of buying the winter's supply of coal. A coal dealer doesn't charge a separate fee for giving a price for coal delivered at your residence. He has computed the cost to unload and store the coal. He knows what it costs on an average to haul coal within the radius of his district. You don't expect him to figure out a price for you at so much per ton-mile for delivery at your door and to pay him for making the estimate. No; when you ask a price for a definite amount of coal you expect him to name his price. What it costs him to figure a price you are not interested in. If he set an estimating charge you couldn't tell whether it was fair or not. You wouldn't care to be bothered with separate payments and wouldn't expect that it would result in any economy to you if the coal dealers adopted such a practice.

This example of the coal transaction should point out an important difference in the contracting business. Quantity data is furnished to the coal dealer and he names his price. In contracting, bidders have been doing both the quantity work and the pricing or estimating work. The coal dealer assumes no responsibility as to the amount of coal required. It is your responsibility to order enough to keep you warm during the winter. Contractors, however, have been assuming responsibility for all their quantity work when making bids.

There are many obstacles in the way of collecting estimating expense job by job. Who is going to determine the proper estimating fee for various classes and sizes of jobs? A uniform rate would not apply to all jobs or to all contractors.

Who is going to pay the fee, the owner, the architect, or will it be collected and paid through a broker, acting for the bidders? If paid by the owner or architect, he will expect all bidders to meet the lowest fee accepted by any bidder. Contractors intent on bidding won't hesitate to bid on that account. They will add the difference to their bids if the fee paid seems too small. That would put matters back where they are now. If collected and paid through a broker acting for the bidders, unless the sanction of the architect and owner is obtained, an injustice is done the owner. If the owner must pay he should know to whom he is paying estimating fees and how many. He will be interested to know what it is costing him.

How are the sub-contractors to receive separate payment for their estimating expense? If it is good for the General Contractor, it ought to be extended to the "Subs." If a fee large enough to reimburse the "Subs" is paid to the General Contractor, what assurance is there that it will be fairly divided among the "Subs"? On the other hand, might not the "Subs" victimize the General Contractor by collecting their full allowance from each and all of the General Contractors to whom they tendered a bid for any job?

What effect would it have on competition? It would stifle competition. An owner would choose to pay for a minimum number of estimates. It would foster formation of a Building Trust which could be applied to for all estimates. That, it is useless to say, would not benefit the majority of contractors.

How would an architect or owner know what group of contractors to pay for estimates? They know that some contractors will consider their job attractive and be really desirous of competing for it, but how can they know whom they are? Any contractor can put a price on a job with very little labor which would guarantee a fine profit and some might be tempted to do so if paid $200 or $500 or more for the few hours' labor required to make the estimate. But will that satisfy a building owner or an architect? Is it good business?

If competition is kept open, what will prevent anyone from going into the business of making estimates based on cubage or some other short-cut method and collecting the estimating fee?

Contractors would continually know of jobs that they would like to bid upon, but had not been offered an estimating charge for doing so. Do you think that would stop them from bidding or would stop an architect or owner from considering their bids if they were responsible parties? Most certainly not; and if an owner could get good bids without separate payment for estimating expense do

you think he will pay for others that would be no better?

The contradictory situation would arise where a contractor that wanted to figure a job would beg for the opportunity and at the same time demand to be paid for the privilege.

True estimating expense separated and not confused with quantity expense is a small matter. It is better left as an item of overhead. Estimating cannot be delegated to an outsider. It is too personal, and comprehends the assumption of risks and responsibility based on experience and judgment. Consequently, leave it in overhead along with rent, interest, bad bills, etc. There is no more reason for separating estimating on buildings than there is to separate the coal dealer's estimating expense from the price of a ton of coal.

It is true that contractors cannot under prevailing methods give a price for a building as simply as a dealer can for coal. He must first find out what is going into a building. That involves the matter of quantity expense and the risks carried therewith. An analysis of that part of a contractor's work will develop the **real** reason for the demand and agitation for relief and dispel some of the confusion that exists. This will be treated in a following report.

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## Proposed Code of Ethics for Contractors

The committee on ethics of the Associated General Contractors of America, has been very active, judging by its report submitted at the annual meeting held at Chicago, February 18th and 19th. This committee has not only given its attention during the past year to general questions of the relations between contractors and the architect, engineer, sub-contractor and material men, but has also taken up many specific cases of alleged unfair practices, a number of which are mentioned in the report. Two of these cases were founded on the unfair letting of contracts for road work after all bids had been rejected; two involved alleged unfair interpretations of contracts on government work; one alleged unfair advertising and others related to activities of manufacturers to which objections had been raised by contractors. The committee included in its report the following statement which has been submitted to it as the basis for a code of practice:

In all dealings with fellow contractors, with sub-contractors and supply houses, with owners and their representatives, with labor, and with the public, the general contractor should ever be guided by the principles of fair practice that are generally accepted as just in the business world. In addition, the reputable contractor will observe and be bound by all rules of practice established for the good of contractors and generally recognized as beneficial, and will lend his willing support to their enforcement, so long as the interests of the public are not thereby endangered.

Those qualities of honesty, skill and responsibility required for membership in the Associated General Contractors of America should become the guiding factors in determining the general contractor's relations with others. Honesty of purpose should be the basis of all his business transactions. This pre-supposes a reasonable degree of skill in performing whatever work he may undertake, and the possession of sufficient resources, including organization, equipment and finances, to enable him to carry the work to a successful conclusion, and he should be willing to prove the existence of these resources upon demand.

No reputable contractor will enter into a contract for the execution of any project for which his training and experience have not fitted him, nor will he embark upon an enterprise for the execution of which his resources, including assistance that he can reasonably expect, are not sufficient to carry out the undertaking. This is not to be interpreted that personal experience in any particular field of construction is a prerequisite to entrance into that field, but the contractor or his representatives should have demonstrated their ability to handle construction work on a scale similar to that proposed, and preferably work of a similar nature.

No contractor should be a party to any method of letting a public contract not in accordance with the recognized legal procedure and established fair practice.

On private work, a fair code of bidding practice should be adhered to strictly for the joint protection of the contractor and the owner or his representatives.

When a contractor is invited to submit a proposal on work for which he is unable or unwilling to compete, he should immediately notify the architect or engineer to that effect.

No general contractor should submit a borrowed or accommodation bid.

Where plans for securing payment for estimating are in force, no contractor should collect payment for an estimate without the knowledge of the owner or his representative.

After bids have been opened and rejected, no contractor should be a party to the award of the contract until new proposals have been taken in due form.

In undertaking work in a locality where there are generally recognized agreements in force between contractors and labor, and architects and engineers or between contractors and any other group, a contractor should respect these agreements, if possible; or he should confer with those responsible for such agreements regarding them; or he should publicly announce his intention not to abide by the terms of such agreements, giving his reasons for so doing. Changes in an agreement should be brought about, as far as possible, through joint consent of accredited representatives and not through infraction of its provisions. Much of the stability and prosperity of the construction industry is entirely dependent upon the strict adherence to agreements and codes of practice not always enforcable by law.

Upon each general contractor falls the responsibility of maintaining and building up the reputation of contractors as a group. His duty to his fellows and to himself demands that by energetic application and keen attention to the enterprise in hand, he keep the standards of contracting high and add to its good reputation. Where not opposed to public interest, he should work loyally for the success of measures brought forward to benefit contractors as a whole, regardless of his present interest or lack of interest in the plan.

Since it is part of every man's duty to participate in movements to protect and advance the public welfare, the general contractor should exert his influence toward furthering the interests of the public. Particularly in matters in which his experience makes him unusually well qualified to act, he should give freely of his thought and support, and hold himself in readiness to assume responsibilities should that be requested of him. He should co-operate with public officials in the discharge of their duties in matters where such co-operation is

proper, and should watch carefully to see that none of the laws pertaining to construction are violated on his operations.

By sincerely following these general principles as a basis, with the further guidance of a series of decisions from the Committee on Ethics concerning representative cases, members of the Association will continually offer proof of their integrity and responsibility, and will safeguard the good name of contracting.

## Code of Practice for Bidding

A code of practice to govern the taking of bids and letting of contracts has been prepared by a joint committee representing the Master Builders' Association of St. Louis and the St. Louis chapter of the American Institute of Architects. While conforming in the main to provisions of similar codes adopted in other cities it differs in some respects, and is remarkable for its brevity and succinctness. Following is the code:

1. Whenever possible, bids should be opened at a fixed hour and specified place, and should be made known to all bidders as promptly as possible.

2. Invitations to submit proposals should be confined to contractors with whom the owner or architect will enter into contract for the performance of the proposed work. The lowest bidder invited is entitled and should be awarded the contract for the work bid on.

3. Bids should be submitted on plans and specifications, and addendas, provided by the architect. Addendas should be given all bidders in ample time to permit them to make necessary revisions in their estimates.

4. When sub-bids are to be taken by the architects or owner, all bidders should be advised thereof at the time they are invited to submit estimates.

5. When a contractor is invited to submit an estimate, and he is unable or unwilling to compete for the proposed work, he should immediately notify the architect to that effect, and should not submit a borrowed or accommodation bid. Such methods are considered unfair to the architect and are condemned as bad practice.

6. When the lowest bid is rejected, it should be considered unfair to offer the contract to a higher bidder, or any other contractor, at the rejected bidder's price.

7. All bidders are entitled to and should receive a list of such contractors as are invited to submit estimates.

The Master Builders' Committee further suggests that some plan should be devised whereby the contractors invited to bid shall be reimbursed for the cost of their services.

## To Stabilize Labor Conditions

A complete stabilization of labor conditions in the building industry so far as San Francisco and Alameda counties are concerned, is assured through an agreement recently effected between the San Francisco Building Trades Council and the Building Industries Association, the employers' organization.

The agreement not only provides against strikes and lockouts but for the adjudication through a joint arbitration committee of any disputes that may arise.

Practically all building construction employers and approximately 30,000 building trades mechanics are to be governed by the new agreement.

Any contractor undertaking a building enterprise is assured under its terms that no change in labor conditions or demands will be made while the construction work is in progress.

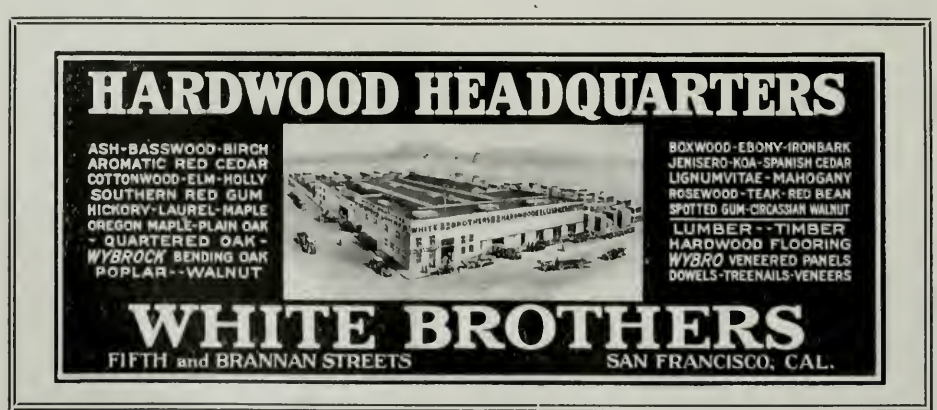
Wages for all of the major building crafts are to remain at their present figure unless living costs change radically, either up or down. Provision is made, however, for an increase of 50 cents a day for a number of the lesser paid crafts.

It is believed that the new agreement will pave the way for an extraordinary increase in building activity.

The agreements probably will be extended to cover most of the state as soon as unified action on the part of the employers can be assured.

## Evaporating Plants

The Pacific Evaporating Company, First National Bank Building, San Francisco, intends to erect a number of evaporating plants in various cities and towns in California. Plans are being prepared by Mr. Walter C. Falch, San Francisco architect.

# New STANLEY Screen Hardware Book

A New Book right from the press describing and illustrating STANLEY SCREEN HARDWARE.

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### Trade Marks for "Brain Power" Secure Protection

Registration was granted for the figure and design of the primitive hewer of stone and the words "Truth Well Told." In granting protection the Copyright Office considered both the originality and artistic quality of the mark. Bizarre arrangement alone will not always secure protection.

IT IS NOW possible to secure government registration and protection for an emblem or business badge of a concern which sells brain power or "service" as distinct from a commodity having the physical attribute of merchandise.

Organizations of engineers rendering a selling or laboratory service have in the past made many futile attempts to register their emblems as trade marks in the United States Patent Office. The Commissioner of Patents has been steadfast in supporting the Examiner of Trade Marks, who held that only insignia applied to articles of trade and commerce might secure the benefit of Uncle Sam's registration. No matter how valuable a "service," or how much brain power was given, it was not deemed that such functioning was capable of being tagged or marked by a sign of origin. Thus, a wide field of endeavor having for its product a "saleable" service or responsibility, has found itself without the same protection for its badge of integrity as accorded a canner of beans or a manufacturer of monkey wrenches.

The issuance, after a prolonged hearing, of a formal Federal credential authenticating the use of the emblem embodying the words "Truth Well Told," by the H. K. McCann Company, advertising agents of San Francisco, is of utmost significance to those who offer the product of the brain as distinguished from commodities having customary physical form.

After being repeatedly balked at the Patent Office, the McCann Company directed its efforts to the Copyright Office at the Library of Congress. The successful plea was based on the fact that the Constitution clearly states that authors and inventors are entitled to protection for their products, and, inasmuch as the protection was refused by the Patent Office, an obligation lay with the Copyright Office to protect a class of marks in many instances very valuable. The McCann Company has just secured as the reward of its efforts the official certification of the emblem shown in the accompanying picture. The primitive hewer of stone, chiseling the words "Truth Well Told," was the emblem granted recognition.

"It is conceivable," Printers' Ink remarks in discussing the decision, "that some emblems in use by personal service organizations and kindred corporations which do not rise above the distinctive decorative stature of the average monogram or grouping of initials, may be challenged at the Copyright Office on the score of 'artistic quality' which is a requisite of admission. However, this attribute seems to have been conceded to the 'Truth Well Told' mark."

Of chief interest to the readers of The Architect and Engineer is the fact that a way is now open for certifying the crest, trade marks, or insignia of laboratories and certain types of expert service. Similarly shippers, forwarders, brokers, commission houses, and all manner of concerns not engaged in manufacturing lines have the way pointed to a new haven.

Of equal importance is the fact that the copyright entry is a more familiar form of trade mark registration with which to win certification in foreign countries. Mr. Harrison Atwood, resident vice president of the McCann Company in San Francisco, says: "Many foreign governments require proof that an identification mark shall have been formally approved in the country of origin. We have found great difficulties in securing the acknowledgement of alien authorities for our mark. With this new certificate of approval which has been granted, the method of securing foreign protection will be easier and more certain."

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### Offers Prizes for Best Buildings

In an effort to encourage improvement in the design and construction of buildings in Washington, D. C., the Board of Trade, through its committee on municipal art, will award medals each year for merit in construction work.

The Washington Board of Trade desires the co-operation of owners, architects, builders, real estate dealers and operators in improving the design and character of the buildings erected, and as an incentive thereto proposes to award prizes for meritorious buildings.

The classes of buildings included in the awards will be as follows:

Commercial buildings, not exceeding four stories in height.

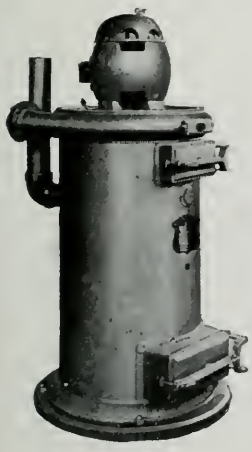
Apartment houses, not exceeding four stories in height—generally, the non-elevator type.

Apartment houses of five or more stories in height—the elevator type.

The award will consist of a bronze tablet, which may be placed on or in the

Imanuel Presbyterian Church,
Milwaukee, Wis.
(Architect unknown)

Third Church of Christ, Scientist,
Los Angeles, Elmer Gray, Archt.



# Cleanliness is Next to Godliness

THAT is why a large majority of the new churches are equipped with stationary suction plants for keeping the walls, ceilings, upholstery, carpeting, furniture and furnishings free from dust.

With a Tuec Stationary Suction Cleaning System the carpeting, tufted cushions and hangings of any church of ordinary size can be thoroughly cleaned in a few hours by a single janitor.

Special cleaning tools enable the operator to remove accumulated dust from places inaccessible even by use of the longest ladders.

TUEC STATIONARY CLEANERS

Recent laws enacted by the state legislatures of Indiana and Wisconsin compel the use of vacuum cleaners in public school buildings.

Sunday school children and church congregations are entitled to no less consideration from architects and church building committees.

*Write for special bulletin "The TUEC in the Church"*

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**BARKER BROS.**
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Office Building for the East Bay Water Company, Oakland.—*William Knowles, Architect.*

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building, with a certificate to the owner, architect and builder.

The buildings will be judged as to their merits in planning, in making the best use of the space, the proper placing of the rooms with their relations to each other, and their outlook from the building, also as to sufficiency of accommodations and equipment.

The reasons for selecting the classes of buildings designated above is that it is thought they represent those in which greater improvements are possible.

In the commercial class the large buildings generally take care of themselves, but the smaller buildings are apt to be neglected.

### Industrial Notes

Mr. O. P. Shelly spent the past month visiting the eastern factories which his firm represents and also signing up new connections. Mr. Shelly is the active sales manager of the Pacific Materials Company, which handles Medusa and White Portland Cement, Samuel Cabot products and other well known lines.

Mr. C. L. Johnson, who has been with the Atlas Portland Cement Company for a number of years, recently paid California a visit, calling on the company's various distributors and renewing acquaintances among the architects and engineers. Mr. Johnson says the East is booming from a building standpoint. It is not so much a question of prices as delivery in the East, Mr. Johnson says, and the prediction is made that the same conditions will shortly apply to the Pacific Coast. The moral is "build now."

Mr. B. L. Wilcox of the Waterhouse-Wilcox Company, manufacturers' agents, in the Underwood building, San Francisco, has been spending several weeks in Los Angeles and Southern California, calling upon the trade and signing up some very good orders. Mr. Wilcox's company handles the J. G. Wilson products in San Francisco, and he reports a good demand for the Wilson folding partitions, casements and wardrobe fronts for schools, clubs, churches, hotels and residences.

### Honolulu Postoffice Building

Mr. C. F. Cykler, who will be remembered as a member of Mr. H. J. Brunnier's engineering staff in San Francisco some years ago, recently paid the California metropolis a visit, coming from Honolulu, where he is chief engineer for the Hawaiian Contracting Company, Ltd. This firm has the contract to build the new postoffice building in Honolulu and it has sub-let quite a number of important contracts to San Francisco firms, including the following:

SERVICE
TESTING
INSPECTION
CONSULTATION
PRODUCTION
Structural and Engineering Materials
Robert W. Hunt & Co.
Engineers
Chemical and Physical Testing Laboratories
New York Chicago Pittsburgh
St. Louis San Francisco Mexico City
London Montreal

Structural steel—U. S. Steel Products Company; terra cotta and roofing, Gladding, McBean and Company; structural terra cotta and setting, Harry Drake; marble, Vermont Marble Works; plastering, Mac Gruer and Simpson; wiring, Butte Electric and Manufacturing Company; sheet metal, Forderer Cornice Works.

### Figuring High School Group

A group of high school buildings, designed by Messrs. Coates and Traver and R. C. Felchin of Fresno, will be erected in Fresno as soon as contracts are let. Bids for the construction work will be opened April 8th. There is $1,000,000 available.

### To Design Court House

Messrs. George C. Sellon & Co., 1005 Eighth street, Sacramento, have been formally commissioned to prepare plans for the $200,000 court house at Red Bluff, Tehama County.

### $500,000 for Vallejo Schools

Vallejo will vote May 4th on the question of issuing $500,000 bonds for a new high school building and four new elementary school structures.

# Present Cost of Building Materials

## With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, March 20, 1920.
All prices f. o. b. cars San Francisco or Oakland.
**Note.**—For country work add freight and cartage to prices given.

**Bond**—1½% amount of contract.

**Brickwork**—
Common, $36.00 per 1000 laid.
Face, $70.00 per 1000 laid.
Common, f. o. b. cars, $16.00 plus cartage.
Face, f. o. b. cars, $45.50 per 1000, carload lots.
12x12x3 in., 10¼c. per square foot.
12x12x4 in., 11¾c. per square foot.
12x12x6 in., 16¼c. per square foot.
Hod carriers, $7.50 per day.
Bricklayers, $10.00 per day.

**Composition Floors**—30c. per sq. ft.
Klingstone, 27c. to 65c. per foot.

**Concrete Work** (material at San Francisco bunkers)—

| | |
|---|---|
| No. 3 rock | $2.25 per yd. |
| No. 4 rock | 2.40 per yd. |
| Niles pea gravel | 2.50 per yd. |
| Niles gravel | 2.25 per yd. |
| Niles top gravel | 2.50 per yd. |
| City gravel | 2.25 per yd. |
| River sand | 1.40 per yd. |
| Bank sand | 75c. per yd. |

**Monterey Sand**—
No. 1 grade, $1.20 per ton, car load lots, f. o. b. Monterey.
No. 2 grade, $1.00 per ton, car load lots, f. o. b. Monterey.
San-shell-beach, $2.50 per ton.
Cement (F. O. B. cars)...$3.63 per bbl.
Rebate for sacks, 25c. each.
Atlas "White" ..... $9.50 per bbl.
Medusa cement ..... 9.50 per bbl.
Forms ..... $60.00 per M
Wage—

| | |
|---|---|
| Laborers | $6.00 per day |
| Concrete workers | 7.50 per day |
| Cement finishers | 9.00 per day |

**Dampproofing**—
Two-coat work, 30c. per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $6.00 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $9.00 per day.

**Electric Wiring**—$8.00 to $15.00 per outlet.
WAGE—Electricians, $8.50 per day.

**Elevators**—
Prices vary according to capacity, speed and type. Consult elevator companies.

**Excavation**—
$2.00 per yard.
Teams, $12.00 per day.
Trucks, $30.00 to $40.00 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.
Cost of ornamental iron, cast iron, etc., depends on design.

**Flooring**—
Klingstone sanitary fireproof flooring, $55 per ton on job.

**Fire Escapes**—
Ten-foot balcony, with stairs, $100.00 per balcony.

**Glass**—
(Consult with manufacturers.)
21 ounce, 25c. per square foot.
Plate, $1.00 to $3.00 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 40c. per square foot.
**Note.**—Add extra for setting.
WAGE—Glaziers, $8.50 per day.

**Lumber**—
Common (at building), $51.00 per 1000 (average).
Common O. P. (select), $100.00 per 1000 (average).
Flooring—

| | |
|---|---|
| 1x3 No. 1 | $125.00 per 1000 |
| 1x3 No. 2 | 117.00 per 1000 |
| 1x4 No. 1 | 120.00 per 1000 |
| 1x4 No. 2 | 117.00 per 1000 |
| 1x4 No. 3 | 110.00 per 1000 |
| 1x6 No. 1 | 125.00 per 1000 |
| 1x6 No. 2 | 122.00 per 1000 |
| 1¼x4 and 6 No. 1 | 125.00 per 1000 |
| 1¼x4 and 6 No. 2 | 120.00 per 1000 |
| Slash grain, 1x4 No. 1 | 94.00 per 1000 |
| Slash grain, 1x4 No. 3 | 89.00 per 1000 |
| No. 1 common run to T. & G. | 72.00 per 1000 |
| Lath | $17.00 per 1000 |

Shingles—

| | |
|---|---|
| Redwood, No. 1 | $1.60 per bdle. |
| No. 2 | 1.50 per bdle. |
| Red cedar | 1.85 per bdle. |

(Add cartage to above)

Hardwood Floors—
Maple floor (laid and finished), 30c. per foot.
Factory grade floors (laid and finished), 26c. per foot.
Oak (quartered, finished), 57c per foot.
Oak (clear), 41c. per foot.
Oak (select), 39c. per foot.
WAGE—Floor layers, $9.00 per day.

Hardwood Floors (Laid)—
Clear plain oak, per sq. ft.....30c.
In flooring the usual grades of oak used are

| | Grades | Quartered Sawed | Plain Sawed |
|---|---|---|---|
| 5/16" | Clear | " | " |
| | Select | " | " |
| 1"x3"-13/16"x2¼" | Clear | " | " |
| | Select | " | " |
| | No. 1 (very little used) | | |

⅞-inch plain oak.....58c.
⅞-inch quarter sawed.....70c.

**Hardwood Floors (not laid)—**

| | | Per M ft. |
|---|---|---|
| 13/16x2¼" face | Clear quartered oak | $470.00 |
| | Select quartered oak | 360.00 |
| | Clear plain oak | 350.00 |
| | Select plain oak | 315.00 |
| | Clear maple | 225.00 |
| | Clear maple—white | 255.00 |
| 13/16x3¼" face | Clear maple | 230.00 |
| 1⅛x2¼" face | Clear maple | 235.00 |
| ⅜x2" face | Clear quartered oak | 310.00 |
| | Select quartered oak | 260.00 |
| | Clear plain oak | 260.00 |
| | Select plain oak | 225.00 |
| | Clear maple | 180.00 |
| | Clear beech | 175.00 |
| | Clear red beech | 215.00 |

**Veneered Panels—**

| 24x60 in., ¼ in., 3-ply, 1 side: | Per ft. |
|---|---|
| Ash | 26c. |
| Hungarian Ash | 39c. |
| Birch | 26c. |
| Curly Birch | 39c. |
| Elm | 24c. |
| Jenisero (Genezero) | 37c. |
| Southern Red Gum (plain fig.) | 32c. |
| Qtd. Southern Red Gum | 39c. |
| Hawaiian Koa | 39c. |
| Maple | 24c. |
| Birdseye Maple | 47½c. |
| Mahogany | 39c. |
| Oregon Pine | 19½c. |
| Plain Oak | 31c. |
| Quartered Oak | 39c. |
| Walnut | 39c. |

**Millwork—**

O. P., $150 per 1000. R. W., $180 per 1000.
Double hung box frame windows (average) with trim.....$10.50 each
Doors, includ. trim (single panel) ..... 15.00 each
Doors, including trim (five panel) .....$12.00 each
Screen doors ..... 5.50 each
Window screens ..... 3.50 each
Medicine cases ..... 5.00 each
Cases for kitchen pantries seven feet high, per lineal foot ..... 10.00 each
Dining room cases same price, if not too elaborate,
Flag poles, per foot..... 1.50

**Labor—**

Rough carpentry, warehouse heavy framing, $15.00 per 1000.
For smaller work, average, $23.00, $30.00 per 1000.
WAGE—Laborers, $6.00 per day.
Carpenters, $8.50 per day.

**Marble—**

| | |
|---|---|
| Columbia | $1.50 sq. ft. |
| Alaska | 1.50 sq. ft. |
| Tennessee | 1.75 sq. ft. |
| Verde Antique | 3.00 sq. ft. |

**Painting—**

Two-coat work, 35c. per yard.
Three-coat work, 45c. per yard.
Whitewashing, 5c. per yard.
Cold water paint, 10c. per yard.
Klingstone finish, 18c. per lb., barrel lots.
WAGE—Painters, $8.50 per day.

**Patent Chimneys—**

| | |
|---|---|
| 6-inch | $1.50 lineal foot |
| 8-inch | 1.75 lineal foot |
| 10-inch | 2.25 lineal foot |
| 12-inch | 3.00 lineal foot |

**Pipe Casings**—$8.00 each.

**Plastering—**

Interior, on wood lath, 80c per yard.
Interior, on metal lath, $1.25 per yard.
Exterior, on brick or concrete, $1.00 per yard.
Portland White, $1.25 to $1.50.
Interior on brick or terra cotta, 60c to 65c per yard.
Exterior, on metal lath, $2.25 to $2.50 per yard.
Wood lath, $17.50 at yard per 1000.
Metal studding, $1.00 to $1.25 per yard.
Metal studding, with lath and plaster, $1.90 per yard.
Klingstone stucco, $37.50 per ton, on job.
Galv. (metal lath), 38c. and up per yard, according to gauge.
Lime, f. o. b. warehouse, $2.40 per bbl.
Hardwall plaster, $20.00 per ton f. o. b. warehouse.
Klingstone stucco, on galvanized metal, $1.60 to $2.25 per yard.
WAGE—Hod carriers, $8.50 per day.
Plasterers, $10.00 per day.

**Plumbing—**

From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $9.00 per day.

**Reinforcing Steel—**

Base price for less than car load lots, $4.75. per 100 lbs.
Car load lots, $4.35 per 100 lbs., f. o. b. San Francisco. (Mill delivery.)

**Roofing—**

Five-ply tar and gravel, $7.50 per square.
Tile, $35.00 per square.
Redwood shingle, $13.00 per sq. in place.
Cedar shingle, $13.00 per square in place.
Reinforced Pabco roofing, $8.25 per square.
WAGE—Roofers, $8.00 to $9.00 per day.

**Rough Hardware—**

Nails, per keg, $8.50 base and very scarce.
Deafening felt, $110.00 per ton.
Building paper, P. & B.,
1 ply, $3.85 per 1000 ft. roll.
2 ply., $5.75 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.50 per hank 100 feet.
Common, $1.75 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

**Skylights—**

Copper, $1.25 a square foot (not glazed).
Galvanized iron, 50c. a square foot (not glazed).
WAGE—Sheet metal workers, $9.00 per day.

**Store Fronts—**

Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.35 per lin. foot.

**Structural Steel**—$150.00 per ton.

This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.

**Tile—**

White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $2.00 per sq. foot, laid.

**Windows—**

Metal, $2.00 a square foot.

Healdsburg School, Wm. H. Weeks, Architect
Robert Dalziel, Jr., Plumbing Contractor

# Quality in Plumbing Fixtures

HAINES, JONES & CADBURY Plumbing Fixtures are used throughout this beautiful building. The Architect who specifies **HAJOCA** Plumbing Fixtures, be they for School Houses, Hotels, Apartments or Residences, is *Protected* by a Guarantee of a Firm that has been in business a half century. He has every assurance the quality is there.

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### Engineers Endorse Hetch Hetchy Plans

San Francisco Chapter, the American Association of Engineers, has adopted resolutions unanimously urging the continuance of the work on the Hetch Hetchy project by the city of San Francisco.

Copies will be forwarded to the Mayor and the Board of Supervisors. This Association numbers over four hundred professional engineers of all specialties, and its vote of confidence in the work of the City Engineer, Mr. M. M. O'Shaughnessy, should assure the public that this stupendous municipal project will proceed in an orderly and efficient manner.

The resolutions in full are as follows:

WHEREAS: The American Association of Engineers, San Francisco Chapter, note with necessary concern, the threatened cessation of work on the Hetch Hetchy project with the possibilities of a breakdown on the morale and efficiency of the present construction organization with an attending economic loss to the city of San Francisco.

WHEREAS: The Hetch Hetchy project, a colossal engineering feat, has been made possible only after a hard, long, bitter fight, still fresh in the minds of not a few, against corporative and political interests, and by the people of San Francisco, who have provided the necessary financial means and machinery by a vote of large plurality. It is, therefore, a duty to the people as well as an obligation to those public spirited citizens whose efforts have made this great municipal water system possible that the completion of the project be expedited, so that the present generation shall derive some of its benefits.

WHEREAS: The logical program to follow is doubtless to complete as rapidly as possible the development of the preliminary works, in order to reach that phase of the project that will promise some income to the municipality.

WHEREAS: The uncertainty of an adequate water supply and of a sufficient potential hydro-electric power supply have been and are at the present time, determining factors in the loss to the San Francisco Bay District of extensive and important industrial activities.

THEREFORE, BE IT RESOLVED: That the San Francisco Chapter of the American Association of Engineers recognize and appreciate in the highest degree, the great accomplishments, involving no little engineering skill, and the splendid, efficient organization of the City Engineer and his assistants in the prosecution of the work of the Hetch Hetchy system, and that the work now being done by force account, under the jurisdiction of the City Engineer is resulting in a considerable saving to the City of San Francisco, we therefore, offer the City Engineer of San Francisco, our full support and confidence in the present crisis.

RESOLVED: That the present financial crisis of the Hetch Hetchy project demands immediate, definite and decisive action by the Board of Supervisors that will insure no delays in the development of the project which is urgently needed by the people of San Francisco.

RESOLVED: That the action taken by the Mayor of San Francisco in the present Hetch Hetchy crisis is hereby endorsed.

RESOLVED: That a copy of these resolutions be transmitted to the Mayor, the Board of Supervisors, to the City Engineer and the City Attorney.

### Engineers Hear Mr. Miner Chipman

The American Association of Engineers, San Francisco Chapter, was addressed at its last meeting, held March 4th, by Mr. Miner Chipman on the subject "The Engineer as an Executive."

The message of this industrial engineer to the four hundred members of the local profession was the most inspiring one ever delivered before a technical body. Incident after incident was cited to demonstrate the opinion of the speaker that engineers make the best executives when given full power by the directors to act. He predicted that the future leaders in the manufacture and sale of goods would come from the ranks of the professional engineers. The day of the practical business man is closing, to be followed by the day of the scientist, who is, in reality, the most practical man in the world, because he accepts greater hazards in attempting new projects with a confidence born of a knowledge of his power in controlling the great force of nature.

### Women in the Lumber Industry.

Women have had a voice in planning homes for many generations, but the importance of her influence in marketing lumber is just beginning to be publicly recognized. This winter women have had places on the big convention programs in the lumber industry, particularly of the large retail associations in Wisconsin, Michigan, Pennsylvania and Oklahoma, and their addresses on home building and home making have directed attention anew to the fact that they are important factors in the selling of lumber. In these addresses nearly every woman has emphasized the need of so arranging her home as to save work and to enhance its beauty and convenience.

Recognizing the value of a trained woman in planning home building, a large Michigan lumber company has employed a woman expert to act as "Home Building Consultant," the appointment following this woman's address before the Michigan Retail Lumber Dealers' Association. A woman is seller for a big lumber company in Toledo, Ohio, selling last year more than $72,000 worth of lumber in carload lots, and women are engaged as special writers on home building by several of the prominent lumber magazines. The champion log salesman in the Pacific Northwest, according to a Portland, Ore., authority, is a woman

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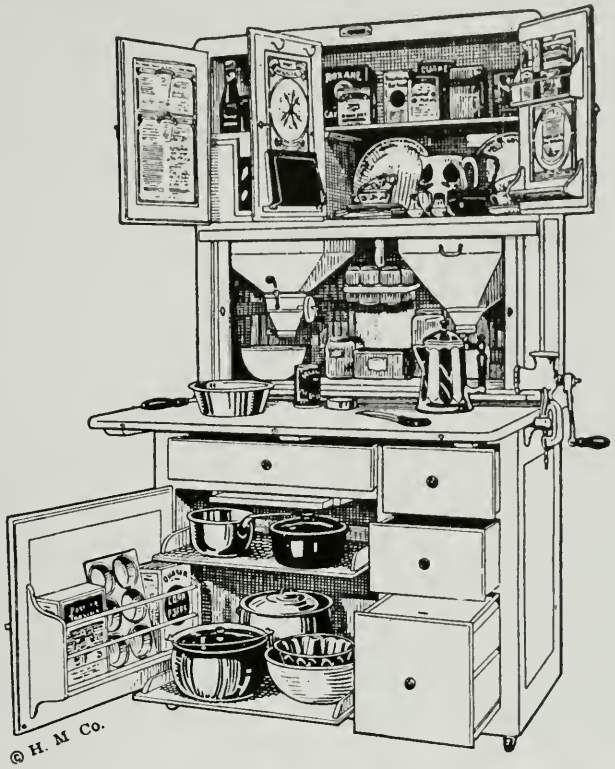


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who last year disposed of 78,000,000 feet of saw logs, her success being largely due to her wonderful knowledge of stocks and supplies. A woman is the successful purchasing agent for seventy-five retail lumber yards in Idaho, Utah and Colorado, and there are at least two women secretaries of state retail associations.

### Lumber Prices and Industrial Earnings

Chicago, Ill., March—With a big building program projected for 1920, the price of building materials is of paramount importance. On a basis of 1907 prices as 100 per cent, we give a table of percentages of wholesale prices compiled from figures of the United States Bureau of Labor Statistics, from which may be seen the net increase in the prices of lumber and building materials.

Figures for farm products and clothing are not available for a period later than November, 1919. Labor is shown to have increased 156 per cent above the average price of 1907, whereas all commodities increased 166 per cent during the same period.

| | Lumber & Bldg. Materials | Farm Products | Clothing | All Commodities |
|---|---|---|---|---|
| 1907 | 100 | 100 | 100 | 100 |
| 1918 Nov. | 159 | 254 | 247 | 220 |
| 1919 Nov. | 229 | 276 | 315 | 246 |
| 1920 Jan. | 256 | ... | ... | 266 |

At the time of the signing of the armistice, the War Industries Board showed an average mill price for lumber in the United States which was only 56 per cent higher than the average price for the first nine months of 1907. Hemlock was 60% higher; yellow pine, 61%; plain oak, 74%; Douglas fir, 41%. During the same period—from 1907 to November, 1918—Portland cement had increased 71%; common brick, 98%; lime, 115%; bituminous coal, 119%; fuel oil, 151%; coke, 123%.

### Passing of a Distinguished Landscape Architect

The Pacific Coast Chapter of the American Society of Landscape Architects has received notice of the death of Mr. John Charles Olmsted, at Brookline, on February 24th.

Mr. Olmsted had been in poor health for the past year. He was the senior partner of the firm of Olmsted Brothers, and one of the ablest men in the profession. He was a graduate of Yale University, and learned his business in the office of Mr. F. L. Olmsted.

It was largely due to his untiring efforts that the Metropolitan Park System of Boston became the finest of its kind in this country. He was very active in the work for the World's Fair at Chicago in 1892, co-operating with Burnham & Root—making it one of the finest examples of Exposition work that the world has ever seen. He was commissioned to prepare plans for the South Park Commission of Chicago for the fourteen small playgrounds and to remodel Jackson Park after the Exposition was over.

He prepared plans for the widening of Michigan avenue and the development of Grant Park. His firm prepared plans for the Pan-American Exposition at Buffalo, the Lewis & Clark and Seattle and Portland Expositions, and he personally designed the layout for the San Diego Exposition in Balboa Park. He also designed Fairmount Park for the city of Riverside, California, and was active in the work for the city of Torrance, and in the subdivision of the Palos Verdes Ranch for the Vanderlip Syndicate, near Los Angeles.

His experience covered work for the national government at West Point Military Academy on the Hudson and in the preparation of plans for Greater Washington during President Roosevelt's administration. For many years he was busy on the Vanderbilt property at Biltmore, making of it one of the finest examples of private estate work in this country.

He was an extremely modest man and a tireless worker. Most of the members of the American Society of Landscape Architects passed through his office and received the benefit of his wise counsel and advice. The profession has lost an able exponent. A man who stood for the best ethics of the profession and who has secured recognition for the profession as one of the Fine Arts. To those who had the privilege of working for him and with him, his loss is truly a personal one and keenly felt. The appreciation of his work will grow from year to year and become a standard which all professional landscape architects will refer to as typifying the best in landscape design.

W. D. COOK, Jr.

### Garage Door Hardware

"Distinctive Garage Door Hardware" is the title of an attractive new catalogue just issued by the Richards-Wilcox Manufacturing Company of Aurora, Ill. This catalogue contains ninety-six pages and is printed on heavy white enamel stock, 8½x11 inches. It is unquestionably one of the clearest and fullest reproductions of the most complete line of garage door hardware that has ever been given.

The details of the book were worked out with painstaking care in order to present in a concrete, and at the same time complete manner, the hundreds of sets of equipments made by the Richards-Wilcox Manufacturing Company, for use on garage doorways of every kind.

In this book, the garage architect, builder, owner, or hardware merchant can readily locate all the information he

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This wonderfully pure and even iron takes and holds a coat of galvanizing better than any other metal. The galvanizing adheres closely and because it is fused with the base metal does not crack or peel off.

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**D. E. Fryer & Co.....Seattle, Spokane, Tacoma, Wash.; Great Falls, Mont.**

requires regarding suitable garage door hardware for any conceivable doorway.

The body of the book is printed on heavy white enameled paper in two colors, and each set of hardware is illustrated by half-tone cuts showing actual installations; also elevation and plan diagrams showing operation of doors and application of hardware parts.

The cover design shows a reproduction of a real installation of "Slidetite" Door Hardware in full color, printed from half-tone process plates. The picture is true to life—even to the little birdhouse nestled among the trees seen between the two automobiles which stand in the driveway.

This garage doorway is twenty feet wide and has nine doors. Five of the doors slide and fold to one side and four of them to the other side. Three automobiles occupy the garage, side by side. The doors close weather-tight into the door frame. Mr. F. G. Adakson, treasurer of the Stephens-Adamson Manufacturing Company, Aurora, Ill., owns the garage in the picture, and is enthusiastic about the door hardware.

A copy of "Distinctive Garage Door Hardware" will be mailed to any one interested in garage door hardware, who will address a request for Catalog A-22 to the Richards-Wilcox Manufacturing Company, Aurora, Ill., or any of its branches.

### Important Consolidation

The following announcement will interest architects, engineers, contractors and others having occasion to use sand, rock and gravel for their concrete work:

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(Concluded on page 138)

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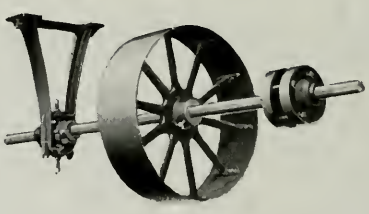

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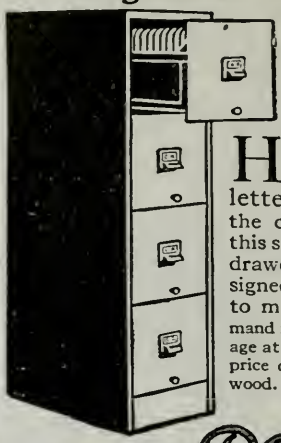

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Thos. J. Coleman
Manager

**A Compliment From Washington, D. C.**

The following complimentary letter to the publishers of The Architect and Engineer has been received from far off Washington, D. C., the writer being a long-time subscriber, Mr. Chas. S. Holloway, now associated in the practice of architecture with Mr. B. Stanley Simmons in the Capital City.

Editor The Architect and Engineer:
San Francisco.

I subscribe to seven magazines, but to none do I look forward to its coming with such genuine pleasure as I do the "little-big" California Architect and Engineer. Even the ads are interestingly "set up" and snappy and the articles on special subjects are certainly helpful and worth while.

It is with a feeling of real pleasure that I enclose my check to cover my subscription account.

With best wishes for your continued success, I am, Yours very truly,

CHAS. S. HOLLOWAY,
Architect.

Washington, D. C., March 11, 1920.

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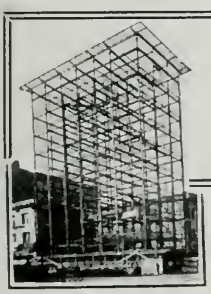

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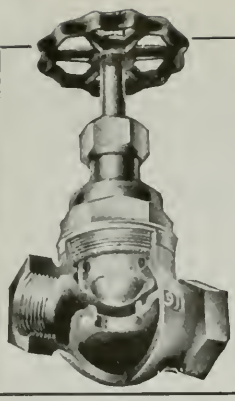

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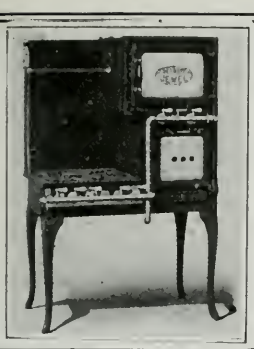

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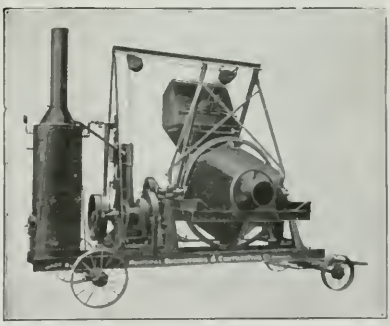

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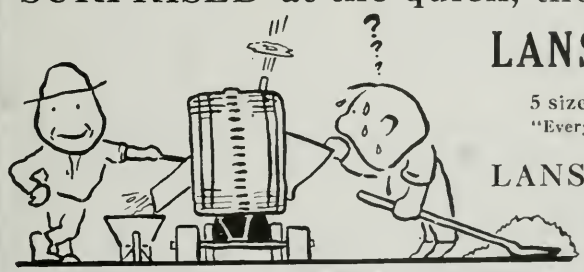

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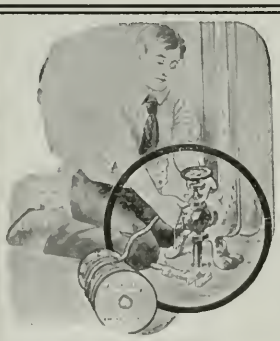

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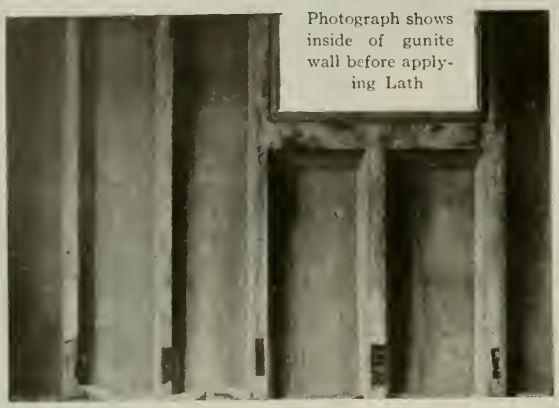

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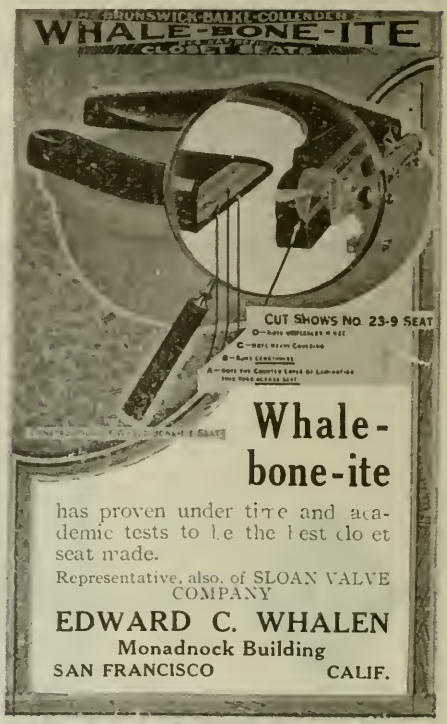


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**N. F. Hesseltine, California Manager. C. H. Gray, Assistant Manager.**

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE REINFORCEMENT (Continued)
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
- Pacific Coast Steel Company, Rialto Bldg., San Francisco.
- Steel bars sold by W. S. Wetenhall Co., 450 Irwin St., San Francisco.
- Triangle Mesh Fabric. Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
- Truscon Steel Co., 527 Tenth St., San Francisco.

CONDUITS
- Garnett, Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
- Barrett & Hilp, Sharon Bldg., San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- R. W. Littlefield, 565 Sixteenth St., Oakland.
- Unit Construction Co., Phelan Bldg., San Francisco.
- Larsen, Sampson & Co., Crocker Bldg., San Francisco.
- J. D. Hannah, 142 Sansome St., San Francisco.
- Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
- A. D. Collman, 110 Jessie St., San Francisco.
- Clinton Construction Company, 140 Townsend St., San Francisco.
- Monson Bros., 1907 Bryant St., San Francisco.
- W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
- A. Knowles, Call-Post Bldg., San Francisco.
- T. B. Goodwin, 110 Jessie St., San Francisco.
- Lange & Bergstrom, Sharon Bldg., San Francisco.
- McLeran & Peterson, Hearst Bldg., San Francisco.
- Robert Trost, 26th and Howard Sts., San Francisco.

CONTRACTORS' EQUIPMENT
- Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
- Harron, Rickard & McCone, Townsend St., San Francisco.
- Lansing Company, 338 Brannan St., San Francisco.
- Garfield & Co., Hearst Bldg., San Francisco.
- Smith, Booth-Usher Co., 60 Fremont St., San Francisco; 228 Central Ave., Los Angeles.

CONTRACTORS' INSURANCE
- Bankers & Shippers Insurance Co. of New York, Insurance Exchange Bldg., San Francisco.

CONVEYING MACHINERY
- Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
- P. H. Reardon, 57 First St., San Francisco.

CORK INSULATION
- Van Fleet-Freear Co., Sharon Bldg., San Francisco.

DAMP PROOFING COMPOUND
- Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
- Glidden's Liquid Rubber. The Glidden Company, 123 Hooper St., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
- "Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS
- Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
- Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
- Stanley Works, New Britain, Conn. John Rountree, agent, Monadnock Bldg., San Francisco.
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
- Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
- Crane Company, San Francisco, Oakland, and Los Angeles.
- Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
- Spencer Elevator Company, 173 Beale St., San Francisco.
- M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS
- Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
- Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
- Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
- NePage, McKenny Co., 589 Howard St., San Francisco.
- Newbery Electrical Co., 413 Lick Bldg., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
- Globe Electric Works, 1959 Mission St., San Francisco.
- M. E. Ryan, Redwood City, Calif.
- Rex Electric & Engineering Co., 253 Minna St., San Francisco.
- H. S. Tittle, 766 Folsom St., San Francisco.
- Severin Electrical Company, 185 Stevenson St., San Francisco.
- Spott Electrical Co., Sixteenth and Clay Sts., Oakland.

ELECTRIC PLATE WARMER
- The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
- Sierra Electric Company, 515 Market St., San Francisco.
- Garnett, Young & Co., 612 Howard St., San Francisco.
- Butte Electrical Equipment Co., 530 Folsom St., San Francisco.
- Safety Electric Company, 56-65 Columbia Square, San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.

ELEVATOR EQUIPMENT
- Elevator Supplies Company, Inc., 186 Fifth St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.
- Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

ELEVATOR DOOR HARDWARE
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

FANS AND BLOWERS
- John Ringius, 252 Townsend St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
- Standard Fence Construction Co., 77 O'Farrell St., San Francisco, and 310 12th St., Oakland.

FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco, 830 S. Los Angeles St., Los Angeles.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.
- Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE INSURANCE
- Bankers & Shippers Insurance Co., Insurance Exchange Bldg., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- Grinnell Company, 453 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.
- Asbestos Paints. The Glidden Company, 123 Hooper St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco.

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
- Inlaid Floor Company, 600 Alabama St., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
- Jas. A. Nelson, 517 Sixth St., San Francisco.

FUEL OIL SYSTEMS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, OFFICE, HOUSE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.
- F. W. Wentworth & Co., 539 Market St., San Francisco.
- Western Office Equipment Co., 467 Market St., San Francisco.
- W. & J. Sloane, 216-228 Sutter St., San Francisco.

GALVANIZED IRON WORK
- Power & Pike Co., 22-24 Main St., San Francisco.
- James A. Nelson, 517 Sixth St., San Francisco.

GARAGE HARDWARE
- The Stanley Works, New Britain, Conn., represented in San Francisco, Los Angeles, Seattle by John T. Rowntree, Inc.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

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SYSTEMS

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

GARBAGE CHUTES
Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 745 Folsom St., San Francisco, sole agents for California.

GAS STEAM RADIATORS—FUMELESS, ETC.
Clow Gas Steam Radiators, F. A. Hamilton, Agent, 101 Rialto Bldg., San Francisco.
Ra Do Fumeless Gas Radiators, manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.
J. O'Shea, 2100 17th St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
Cement Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.
Corbin hardware, sold by Palace Hardware Co., 581 Market St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Inlaid Floor Co., 600 Alabama St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC—GAS
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC.
Alex Coleman, 706 Ellis St., San Francisco.
Gilley Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Moline Heat, Hobart Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
James A. Nelson, 517 Sixth St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
O. M. Simmons Co., 58 Sutter St., San Francisco.

HOLLOW TILE BLOCKS
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
Ralphs-Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 745 Folsom St., San Francisco.
Chicago Signal Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.

HOTELS
St. Francis Hotel, Powell, Geary and Post Sts., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
Ebonite Boiler Kote, sold by California Plastic Products Co., 521 Sheldon Bldg., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.
Sonnenschein Bros., 470 Sutter St., San Francisco.
F. A. Taylor & Co., 251 Post St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.
Freeman Art Shop, 386 Sutter St., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

KITCHEN CABINETS
Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

KITCHEN EQUIPMENT
James A. Nelson, 517-19 Sixth street, San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, Call-Post Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
Jas. F. Smith, 273 Minna St., San Francisco.

LATHING MATERIAL
Pacific Materials Co., 525 Market St., San Francisco.
Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
W. & J. Sloane, 216-228 Sutter St., San Francisco.

LOCKERS—STEEL
George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
California Redwood Association, 216 Pine St., San Francisco.
Dudfield Lumber Co., Palo Alto, Cal.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Sunset Lumber Company, First and Oak Sts., San Francisco.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

METAL DOORS AND WINDOWS
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 330 Tenth St., San Francisco.

MILL WORK
Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.

OIL BURNERS
American Standard Oil Burner Company, Berkeley.
Fess System Co., 220 Natoma St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
G. E. Witt Co., 862 Howard St., San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

OFFICE EQUIPMENT
Western Office Equipment Co., 467 Market St., San Francisco.
F. W. Wentworth & Co., 539 Market St., San Francisco.

ORNAMENTAL IRON AND BRONZE
California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

OVERHEAD CARRYING SYSTEMS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- The Paraffine Companies, Inc., 34 First St., San cisco.
- Anti-Rust Coatings. The Glidden Co., 123 Hooper St., San Francisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Wadsworth, Howland Co., makers of Bay State Brick and Cement Coating, Boston, Mass. Hambley & Son, Distributors in San Francisco and Los Angeles.

PAINTING, TINTING, ETC.
- I. R. Kissel, 1747 Sacramento St., San Francisco.
- D. Zelinsky & Sons, San Francisco and Los Angeles.
- The Tormey Co., 681 Geary St., San Francisco.
- Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
- California Paint Company (see advertisement above).
- Magner Bros., 414-424 Ninth St., San Francisco.
- Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
- The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
- The Glidden Company of California, 123 Hooper St., San Francisco.
- R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
- W. P. Fuller & Co., all principal Coast cities.
- "Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.
- Palace Hardware Co., 581 Market St., San Francisco.

PANELS AND VENEER
- White Bros., Fifth and Brannan Sts., San Francisco.

PARTITIONS—FOLDING AND ROLLING
- J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PAVING BRICK
- California Brick Company, Niles, Cal.

PENCILS
- Eberhard Faber, Monadnock Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
- Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE COVERINGS
- The Paraffine Companies, Inc., 34 First St., San Francisco.

PLASTER CONTRACTORS
- A. Knowles, Call-Post Bldg., San Francisco.
- MacGruer & Simpson, 540 Call-Post Bldg., San Francisco.
- James F. Smith, 273 Minna St., San Francisco.

PLUMBING CONTRACTORS
- Alex Coleman, 706 Ellis St., San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- A. Lettich, 365 Fell St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
- California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
- Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
- Crane Co., San Francisco, Oakland, Los Angeles.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
- H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
- Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
- Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- Wm. F. Wilson Co., 328 Mason St., San Francisco.
- Whale-bone-ite Fixtures, sold by E. C. Whalen, 325 Monadnock Bldg., San Francisco.

POWER TRANSMITTING MACHINERY
- Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.
- P. H. Reardon, 57 First St., San Francisco.

PUMPS
- Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
- Dow-Herriman Company, 140 Howard St., San Francisco; factory, Petaluma.
- Simonds Machinery Co., 117 New Montgomery St., San Francisco.
- Ocean Shore Iron Works, 558 Eighth St., San Francisco.
- Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
- Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

245 Market St. Kearny 2028 **Standard Fence Co.** 310 Twelfth St. Oakland 475

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327-329 JESSIE STREET Phone Garfield 1422 826-830 MISSION STREET
SAN FRANCISCO, CALIF.

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Dow Herriman Co., 140 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

REFRIGERATORS
- McCray Refrigerator Company, San Francisco office, Monadnock Bldg.

REVERSIBLE WINDOWS
- Hauser Window Company, 157 Minna St., San Francisco.

ROOFING AND ROOFING MATERIALS
- Bender Roofing Company, Monadnock Bldg., San Francisco.
- "Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
- United Materials Co., Crossley Bldg., San Francisco.
- The Vulcanite Roofing Co., Texas and 16th Sts., San Francisco.
- H. H. Robertson Co., Hobart Bldg., San Francisco.

RUBBER TILING
- New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
- Pacific Materials Co., 525 Market St., San Francisco.

SAND
- Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
- The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
- C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
- Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
- The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK
- Jas. A. Nelson, 517 Sixth St., San Francisco.
- Power & Pike Co., 22-24 Main St., San Francisco.

SHINGLE STAINS
- Bass-Hueter Paint Company, all principal Coast cities.
- Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francisco.
- Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.
- Argonaut Shingle Stains. The Glidden Co., 123 Hooper St., San Francisco.

SINKS—COMPOSITION
- Petrium Sanitary Sink Co., Fifth and Page Sts., Berkeley.

SKYLIGHTS
- H. H. Robertson Co., Hobart Bldg., San Francisco.
- Jas. A. Nelson, 517 Sixth St., San Francisco.

STATIONERY AND SUPPLIES
- Schwabacher-Frey Stationery Co., 609 Market St., San Francisco.

STEEL HEATING BOILERS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

STEEL TANKS, PIPE, ETC.
- Ocean Shore Iron Works, 558 Eighth St., San Francisco.
- Western Pipe & Steel Co., 444 Market St., San Francisco.

STEEL AND IRON—STRUCTURAL
- Central Iron Works, 621 Florida St., San Francisco.
- Dyer Bros., 17th and Kansas Sts., San Francisco.
- Golden Gate Iron Works, 1541 Howard St., San Francisco.
- Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
- Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- U. S. Steel Products Co., Rialto Bldg., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
- Vulcan Iron Works, San Francisco.
- Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

STEEL REINFORCING
- Badt-Falk & Co., Call-Post Bldg., San Francisco.
- Pacific Coast Steel Company, Rialto Bldg., San Francisco.
- Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Truscon Steel Co., 527 Tenth St., San Francisco.
- W. S. Wetenhall Co., 725 Second St., San Francisco.

STEEL ROLLING DOORS
- Kinnear Steel Rolling Door Co., Pacific Building Materials Co., agents, Underwood Bldg., San Francisco.
- J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles.

STEEL SASH
- Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
- "Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
- U. S. Metal Products Company, 330 Tenth St., San Francisco.

STEEL WHEELBARROWS
- Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

SUMP AND BILGE PUMPS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES
- Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.

TANKS FOR OIL, GASOLINE, KEROSENE, ETC.
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

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- Direct Line Telephone Co., 320 Market St., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

THEATER AND OPERA CHAIRS
C. F. Weber & Co., 365 Market St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

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Johnson Service, Rialto Bldg., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

TILE FOR ROOFING
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

TRANSMISSION MACHINERY
Meese & Gottfried Co., San Francisco, Los Angeles and Portland.
P. H. Reardon, 57 First St., San Francisco.

VACUUM CLEANERS
United Electric Company, Canton, O., manufacturers of Tuec Cleaners, sold in California by San Francisco Compressed Air Cleaning Co., Stockton and Sutter Sts., San Francisco.

VALVES—PIPES AND FITTINGS
Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
Sloane Valves, sold by E. C. Whalen, 325 Monadnock Bldg., San Francisco.
Grinnell Co., 453 Mission St., San Francisco.
O. M. Simmons Company, 58 Sutter St., San Francisco.
H. Mueller Mfg. Co., 635 Mission St., San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
California Paint Company, 1797 Twelfth St., Oakland.
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.
The Glidden Company, 123 Hooper St., San Francisco.
Standard Varnish Works, 55 Stevenson St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VENTILATORS
H. H. Robertson Co., Hobart Bldg., San Francisco.
Power & Pike Co., 22-24 Main St., San Francisco.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.

WALL BEDS, SEATS, ETC.
American Automatic Lock & Lift Co., 72 Fremont St., San Francisco. (Display at 77 O'Farrell street.)
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.

WALL BOARD—Continued.
"Liberty" Wall Board, manufactured by Key-Hold Plaster Lath Co., 148 Hooper St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.
W. & J. Sloane, 216-228 Sutter St., San Francisco.
Uhl Bros., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Bay State Brick & Cement Coating, manufactured by Wadsworth, Howland Co., Boston; Hambley & Son., Distributors for Northern and Southern California.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE CEMENT
"Atlas White," see coast agencies, page 127.
"Medusa White," sold by Pacific Materials Co., Underwood Bldg., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass-Hueter Paint Co. All principal Coast cities.
Velvet White Enamel. The Glidden Company, 123 Hooper St., San Francisco.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOW SHADES
W. & J. Sloane, 216-228 Sutter St., San Francisco.

WINDOWS, REVERSIBLE, CASEMENT, ETC.
Hauser Window Co., 157 Minna St., San Francisco.
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Clinton Wire Lath, sold by L. O. Norris, 140 Townsend St., San Francisco.

WIRE FENCE
Standard Fence, 310 12th St., Oakland.

WOOD MANTELS
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Mangrum & Otter, 827 Mission St., San Francisco.

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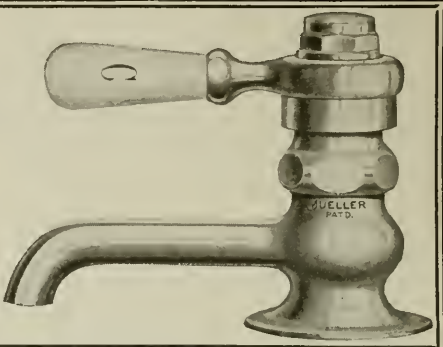


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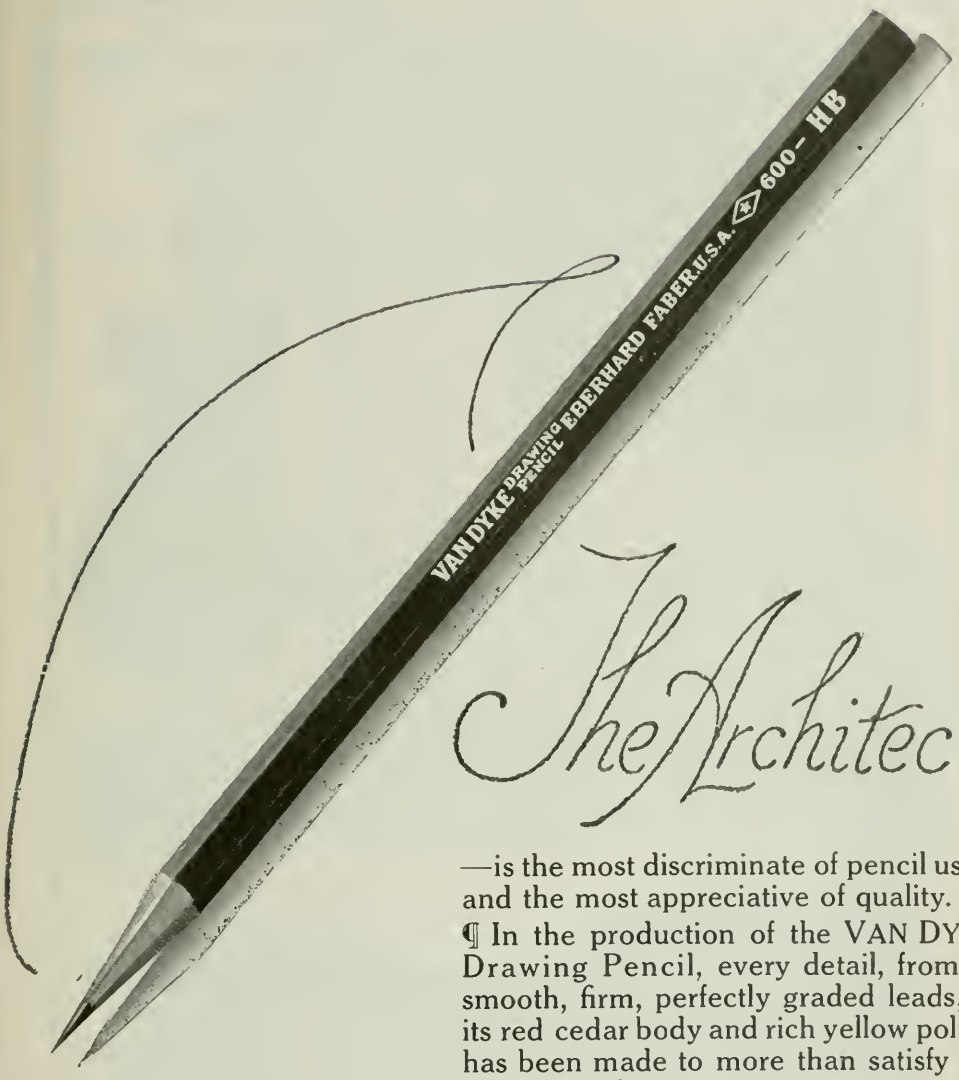


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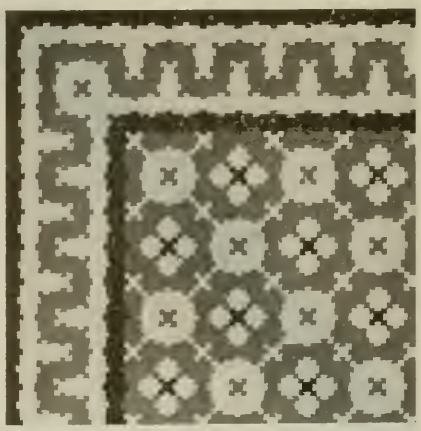

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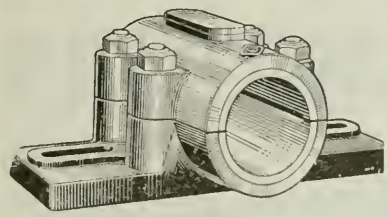

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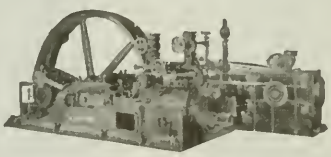

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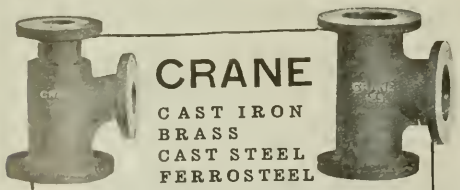

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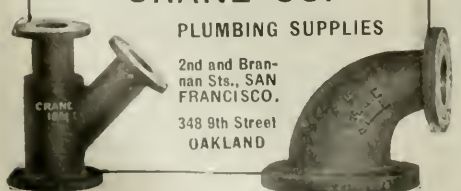

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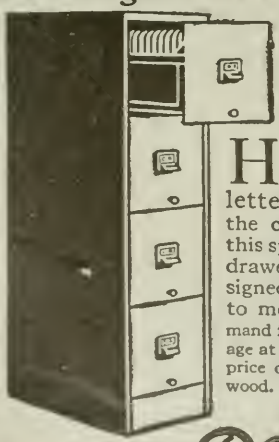

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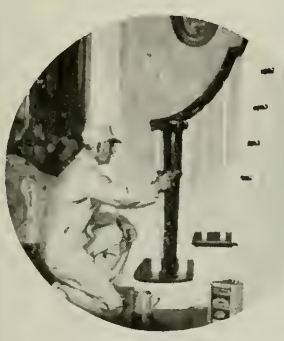

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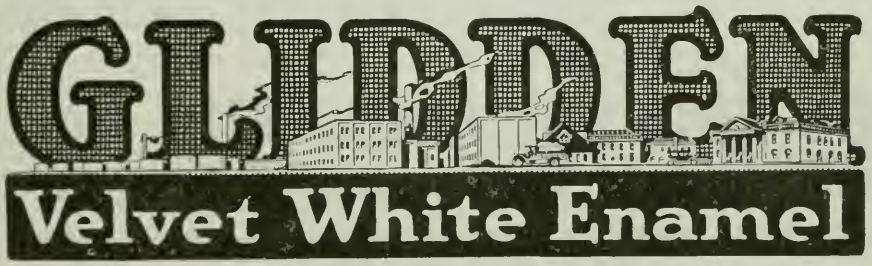

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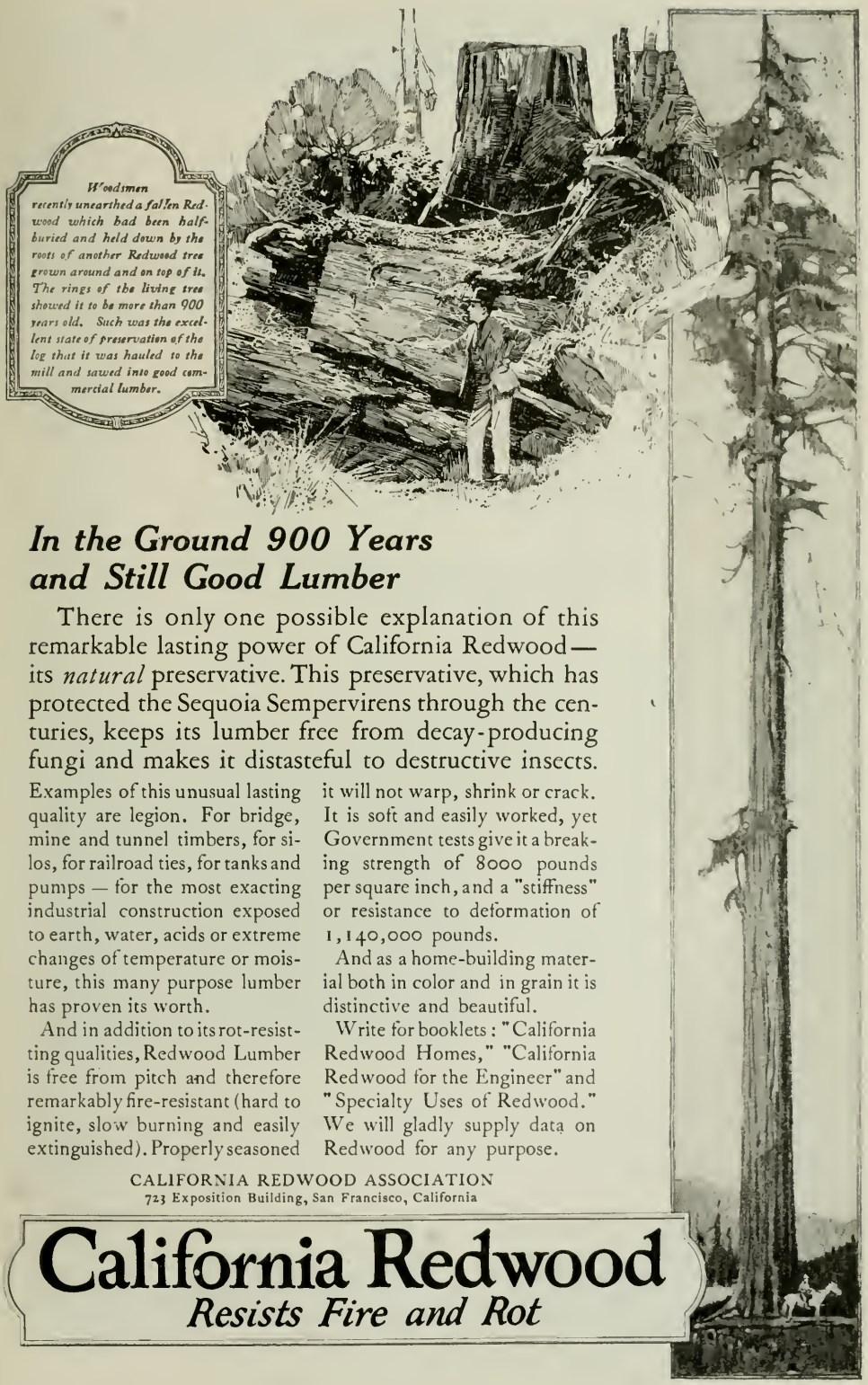

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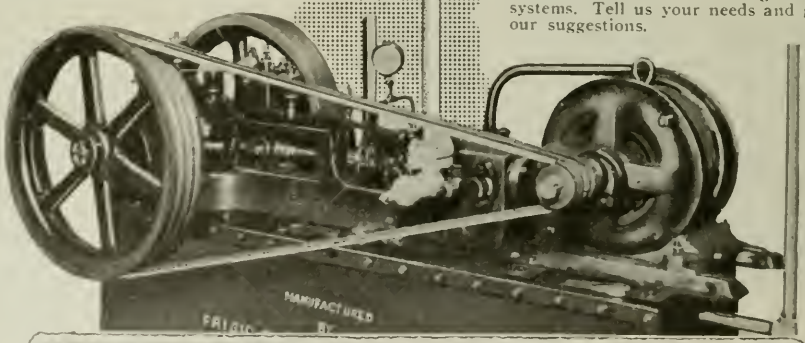

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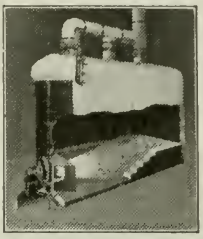

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# The Architect and Engineer

Volume LXI. Incorporated Number 1

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HOUSE IN ST. FRANCIS WOOD, SAN FRANCISCO
H. H. GUTTERSON, ARCHITECT

THE
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APRIL, 1920 Vol. LXI. No. 1.

## On House Builders

By IRVING F. MORROW.

ANY phenomenon may be regarded in two lights—absolutely, as an accomplished result; or relatively, as an index of things ulterior. For instance, suppose a scientist to consider spectra. He may present the theories of light, explain how spectra are produced, describe their appearance, discuss the facts and theories relative to the lines, appreciate the beauty of the colors, and so on. It is obvious, however, that such a line of attack is useful mainly in presenting the subject to the uninitiated. The trained scientist shows less interest in the spectrum *per se;* to him it is significant as an indication of conditions obtaining at the source from which the light emanates. Numerous such examples of the difference in point of view are not far to seek. One may show an interest in children, touching upon their appearance, their manners, their health, their activities, their capacities, and so on, all in and for itself. But to the trained social worker these facts are important in revealing the kind of homes and society from which they come and the kind which they will probably make.

Architectural criticism, where it has not been of the conscienceless press-agent variety, has generally moved in the first sphere. As applied to the survey of a miscellaneous collection of domestic architecture, the formula is simple and an easy course would lie before me. I should recite the purposes of domestic architecture (as if anybody ignored them), the principles of its composition (as

if they differed from those of any other kind of architecture), the history of the development of American domestic architecture (as if it mattered now), and the main sources from which current examples derive (as if anybody were unable to read the table of contents of Fletcher and Fletcher by himself); after which I should catalogue the photographs presented, impartially bestowing an innocuous banality upon each. Banalities there may be in any case: but as between familiar and unfamiliar ones there is at least one advantage to the credit of the latter. I prefer, therefore, to discard for a moment the consideration of houses as artistic manifestations and to regard them as symptoms of the forces which have made them.

By this I do not refer to the architects. There is a common impression that the architect is in a position to foist whatever he pleases upon his client, and

HOUSE OF MISS EMMA CHURCH, PALO ALTO, CALIFORNIA
Charles K. Sumner, Architect

that therefore the house registers his tastes and ideas rather than those of the owner. For the premise there may be a certain amount of justification; but the conclusion is entirely erroneous. The selection of an architect, in so far as it is a free choice, is in itself an indication of the kind of house an owner wishes, or is willing to accept. An owner desiring a three-quarter full size plaster replica of the Petit Trianon does not employ an architect whose reputation is founded upon Gothic churches, any more than an owner who expects a building of genuine distinction employs a designer with no reputation or with an unfavorable one. But even suppose him to have made a conscientious choice of architect, which the progress of the work reveals to have been a mistaken one. If he possesses any convictions whatever in regard to the kind of house sought, he is under no obligation to execute drawings which are unsatisfactory or displeasing.

He is free to dismiss his architect and attempt to evade payment for drawings made, on the ground that he is not using them; after which more congenial professional services may be sought. Consider also the questions of program and cost limitations. The fact that these two sets of requirements are generally quite incompatible does not alter the fact that they are subject to the client's dictation, and when one or the other must of necessity be altered it is for him to say which and to what extent. It is true, therefore, that most owners get just the houses which they desire, or deserve; not infrequently both.

The reason that complete harmony of design is so seldom attained is at bottom because of imperfect harmony between architect and client. The owner often feels, and not infrequently says, that he knows just how he wants it, and would not have an architect at all if he could only draw straight lines. For that

HOUSE OF MISS EMMA CHURCH, PALO ALTO, CALIFORNIA
Charles K. Sumner, Architect

capacity the architect receives generous recognition. The architect, on the other hand, feels that the only obstacle in the way of a perfectly good building is the client, and that things would turn out much better if his activity could be limited to paying the bills. The real stumbling block on both sides is prepossessions. Many owners are ignorant not only of how to compose an agreeable architectural design, but equally of how harmoniously to order their lives. They fail to recognize that both subjects are in the architect's field, and that he (assuming always that he be a competent one) probably has more valid ideas on both than they have. They are ready to ruin an architectural monument for a broom closet. On the other hand, the architect is no less encumbered by prepossessions, and is only too willing to make life miserable for an architectural monument. Not the least or easiest part of the architect's business is to banish preconceptions. If

this can be accomplished, I believe that any demand a client makes (assuming always that he be a reasonable one) can be fairly met. I have no hesitation in making this admission among friends. But I was once indiscreet enough to do so to a client, who remembered it. It may readily be imagined how completely it demolished any adverse stand I might take thereafter.

This subject of the handling of clients is a special phase of the architect's activity, and not the least important one, either. During the recent war there were many and loud complaints from the profession that its members were receiving inadequate recognition from the government in war construction. The architect felt that because his business in peace was building for the people, therefore in war he should be building for the government. I believe that as a

Side toward Clear Lake.

HOUSE FOR DR. WALTER H. FEARN, LAKEPORT, CALIFORNIA
Morrow & Garren, Architects

matter of fact the government's attitude in this was justified. Most war construction was pure engineering for which the average architect was less qualified than the engineer. On one point, however, the government showed lamentable blindness. It failed to recognize the architect's true qualifications for service; but in this it is not to be too seriously condemned, in view of the fact that the architect himself failed to realize his true capacity and to press his legitimate claim. Where the architect should have been of value is neither in the departments in engineering nor camouflage, but in the diplomatic service. For an indispensable part of the true architect's equipment is diplomacy, in which a large practice in domestic architecture should constitute an invaluable training. Many a house has miscarried through errors in diplomatic rather than aesthetic tech-

nique. Young architects in particular are subject to failure on this score, rather than through inability to design.

Nothing is easier than to inveigh against the general incompetence of clients. It is only too true that they frequently choose incapable architects; that they hamper the activities of capable ones when they choose them; that they think about building for twenty-five years and then want plans in two weeks; that they want fifty per cent more house than their maximum allowable expenditure can build; that they fail to appreciate the value of architectural services, and would frequently dispense with them if they only knew where to make the lines themselves; that they dote on every stupid idea embodied in friends' houses and reject every valid idea they have not seen built; that they approve plans in the office, and when the work is done protest that they didn't know it was going to

Side toward road.

HOUSE FOR DR. WALTER H. FEARN, LAKEPORT, CALIFORNIA
Morrow & Garren, Architects

look that way. All this, and much more, might be enlarged upon—yet to what end? For clients, after all, are just people. Like most people, they are doing the best they know how; and it is hardly their fault that in these matters they have never been taught what and how. If they are indifferent to or suspicious of architectural competence it is because they are ignorant of its attributes and of its importance. How helpless, then, our profession really appears! Be its aesthetic equipment ever so impressive, the general standard of its achievement can never surpass what is demanded, or tolerated, by its public.

And the moral? Salvation through the rules and codes of professional organizations and the resolutions of art commissions composed in half of business men? The truth alone shall make us free. There is no salvation outside of the education of the client; which is to say, public education.

HOUSE OF MR. WM. H. CROCKER, BURLINGAME, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

GARDEN OF MR. GEORGE A. NEWHALL, HILLSBOROUGH, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

HOUSE OF MR. CHAS. TEMPLETON CROCKER, BURLINGAME, CALIFORNIA
Willis Polk & Co.

HOUSE OF MR. CHAS. R. McCORMICK, ATHERTON, CALIFORNIA
Lewis P. Hobart, Architect

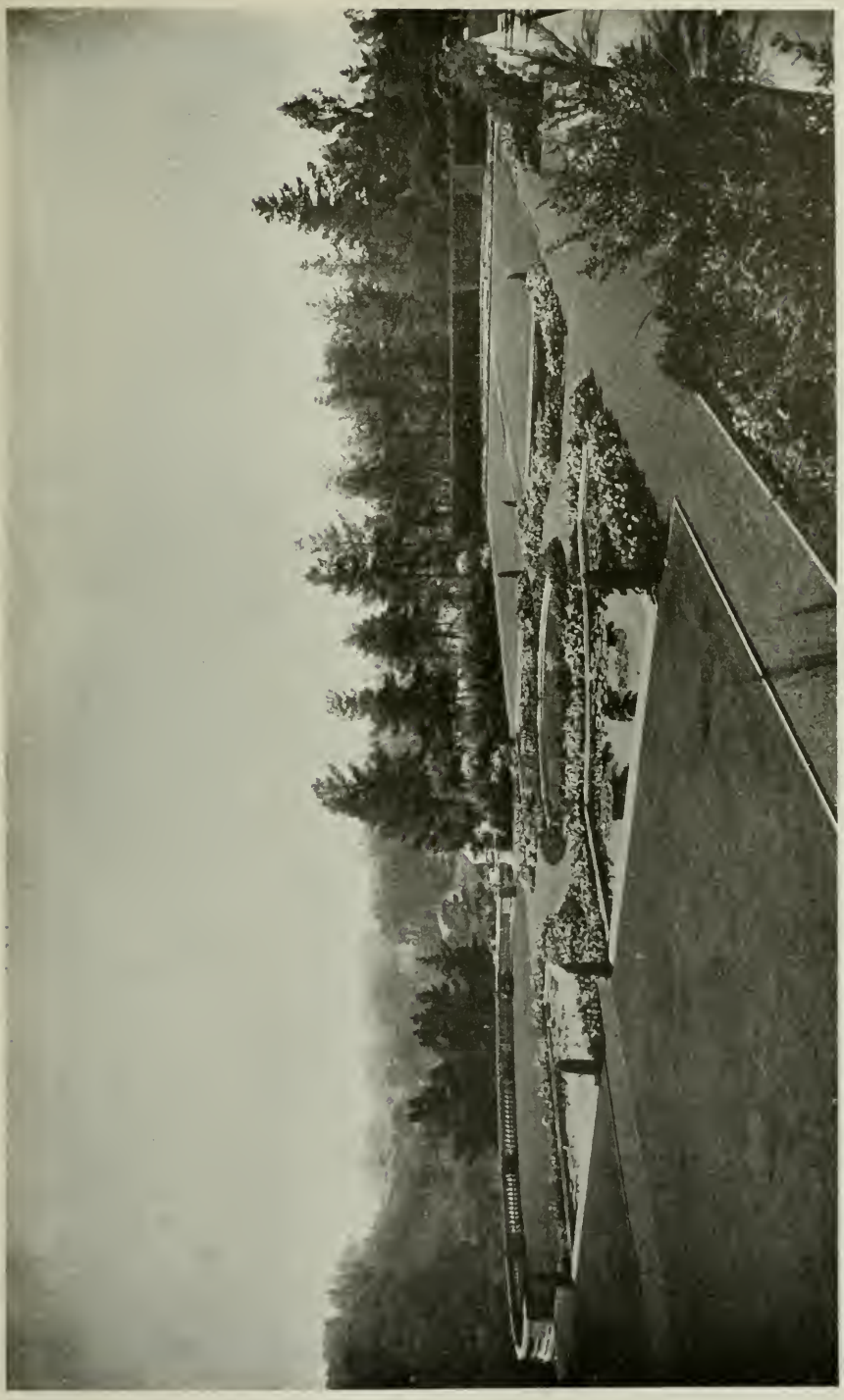
DINING ROOM, HOUSE OF MR. PERRY CUMBERSON, MENLO PARK, CALIFORNIA
John K. Branner, Architect

ALTERATION FOR MRS. WM. CLUFF, MENLO PARK, CALIFORNIA
John K. Branner, Architect

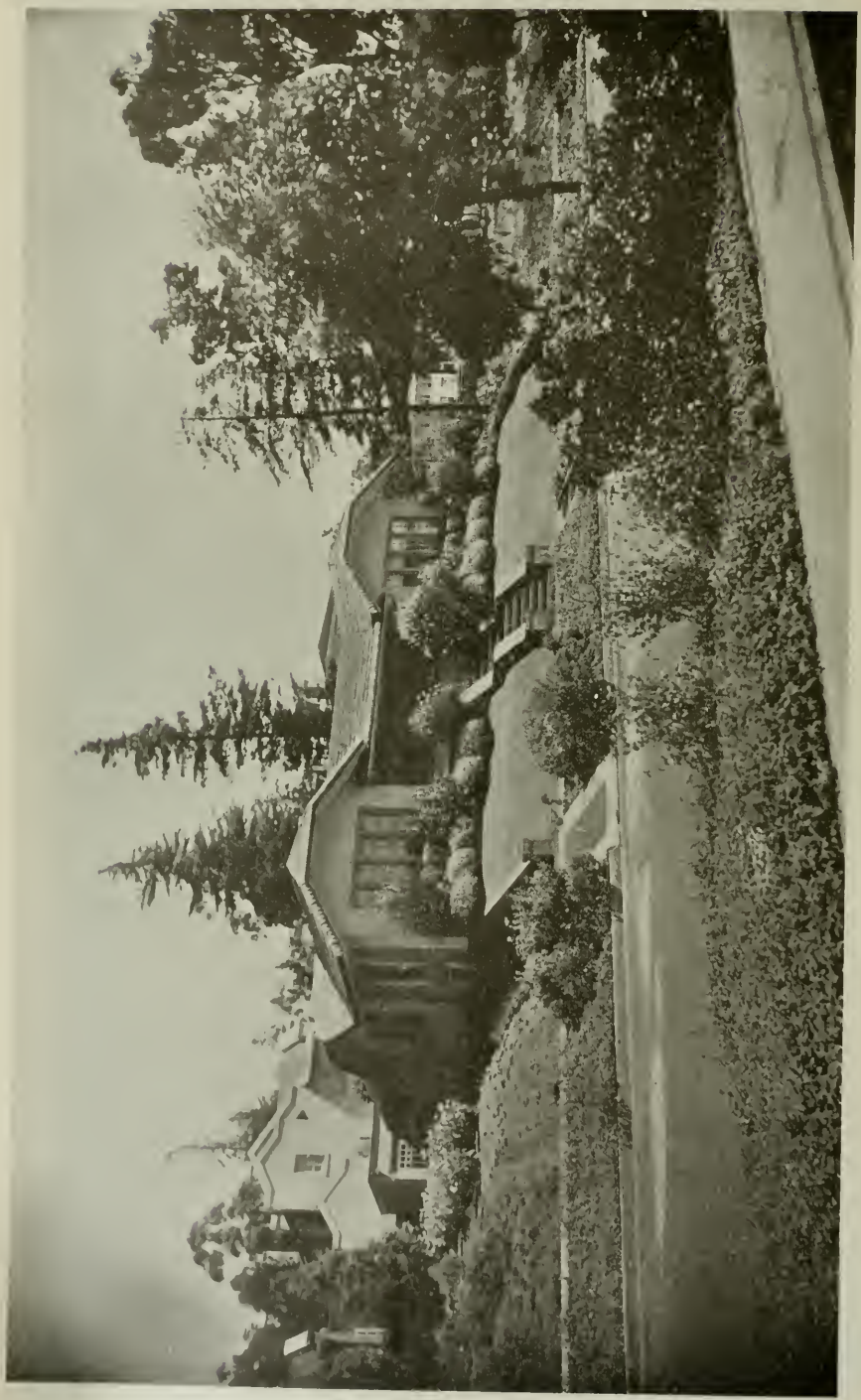
LIBRARY FIREPLACE, HOUSE OF MR. H. R. FAIRCLOUGH, STANFORD UNIVERSITY, CALIFORNIA
JOHN K. BRANNER, ARCHITECT

HOUSE OF MRS. HUGHES AND MRS. KENNEDY, PALO ALTO, CALIFORNIA
JOHN K. BRANNER, ARCHITECT

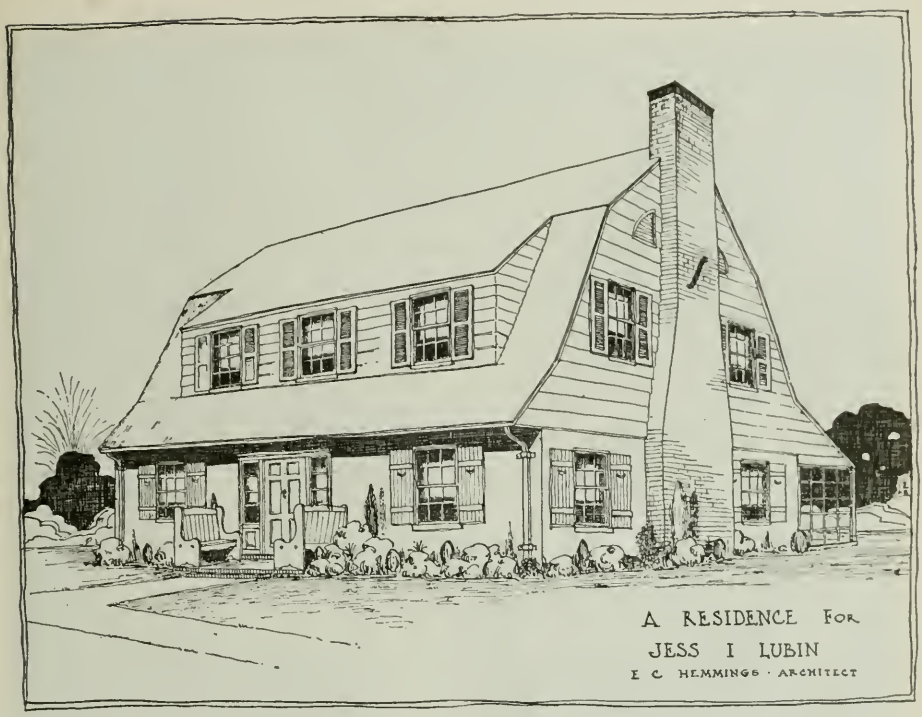
HOUSE OF MRS. HUGHES AND MRS. KENNEDY, PALO ALTO, CALIFORNIA
JOHN K. BRANNER, ARCHITECT



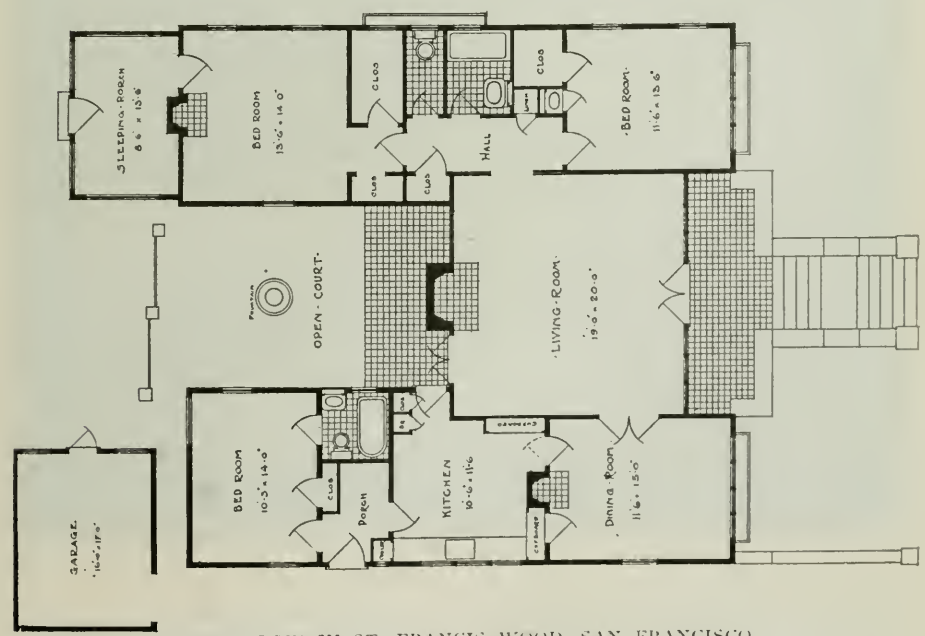
GARDEN OF MR. CHARLES TEMPLETON
CROCKER, BURLINGAME, CALIFORNIA
WILLIS POLK & CO.,



BUNGALOW IN ST. FRANCIS WOOD, SAN FRANCISCO
JAS. L. STEWART,
ARCHITECT




HOUSE OF MR. JESS I. LUBIN, SACRAMENTO
E. C. Hemmings, Architect

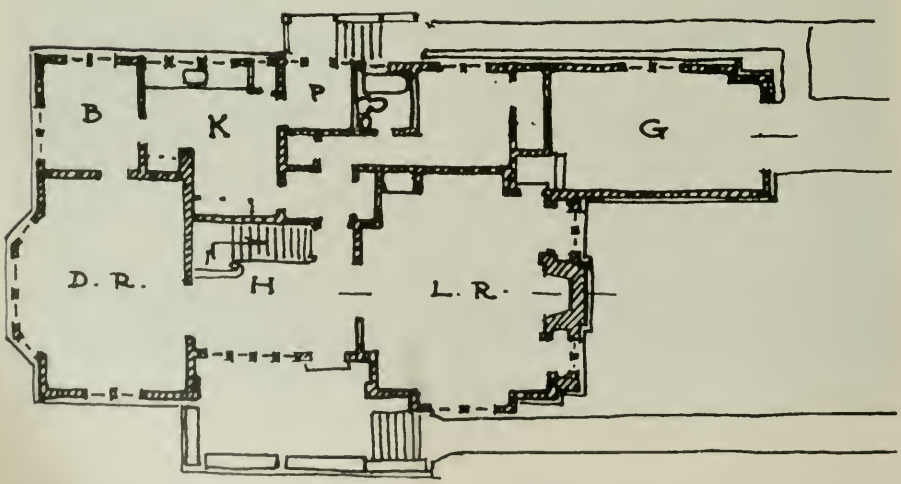



BUNGALOW IN ST. FRANCIS WOOD, SAN FRANCISCO
Jas. L. Stewart, Architect

HOUSE OF MR. HENRY N. CLIFT,
ST. FRANCIS WOOD, SAN FRANCISCO
HEIMAN & SCHWARTZ, ARCHITECTS

HOUSE OF MR. FRANK H. PETERS,
ST. FRANCIS WOOD, SAN FRANCISCO
GERTRUDE E. COMFORT, ARCHITECT

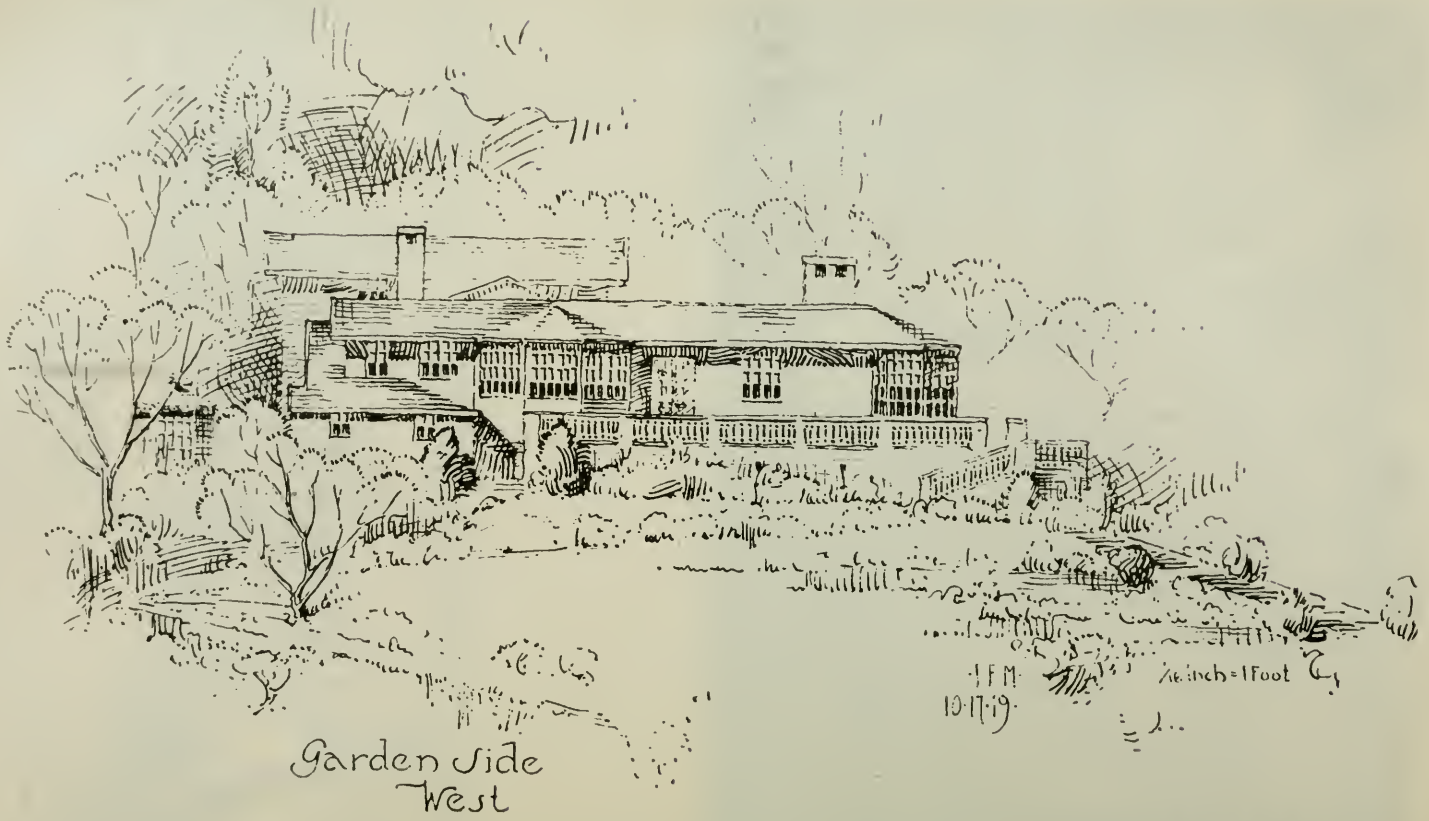
HOUSE IN ST. FRANCIS WOOD, SAN FRANCISCO
H. H. Gutterson, Architect



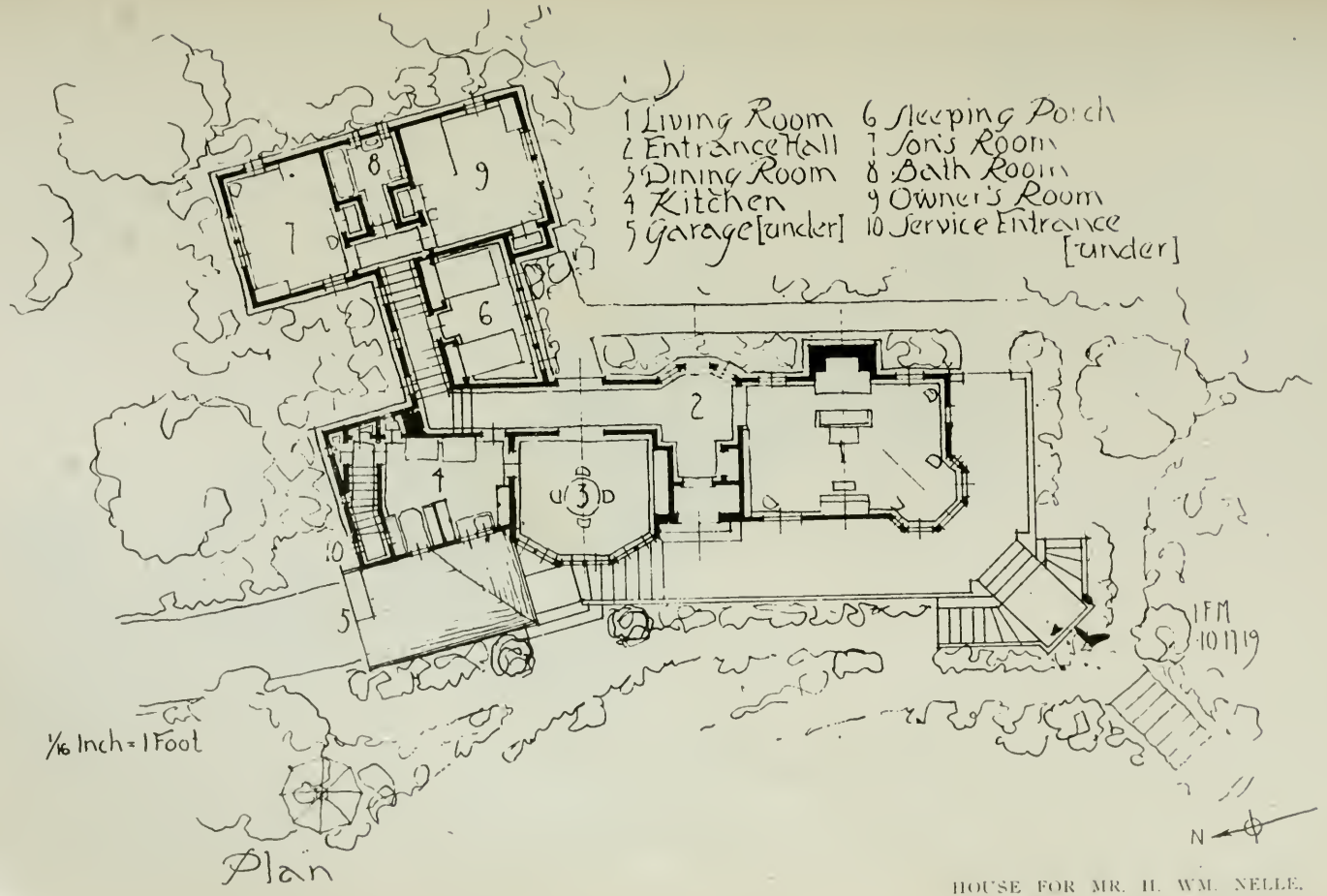

PLAN OF HOUSE IN ST. FRANCIS WOOD, SAN FRANCISCO
H. H. Gutterson, Architect

HOUSE OF MR. E. O. STRATTON, SAN FRANCISCO
H. H. Gutterson, Architect

COUNTRY HOUSE FOR DR. JUNE B. HARRIS, NEAR SACRAMENTO
R. A. Herold, Architect




HOUSE FOR MR. H. WM. NELLE.
PIEDMONT HILLS, CALIFORNIA
MORROW & GARREN, ARCHITECTS




HOUSE FOR MR. H. WM. NELLE, PIEDMONT HILLS, CALIFORNIA
MORROW & GARREN, ARCHITECTS

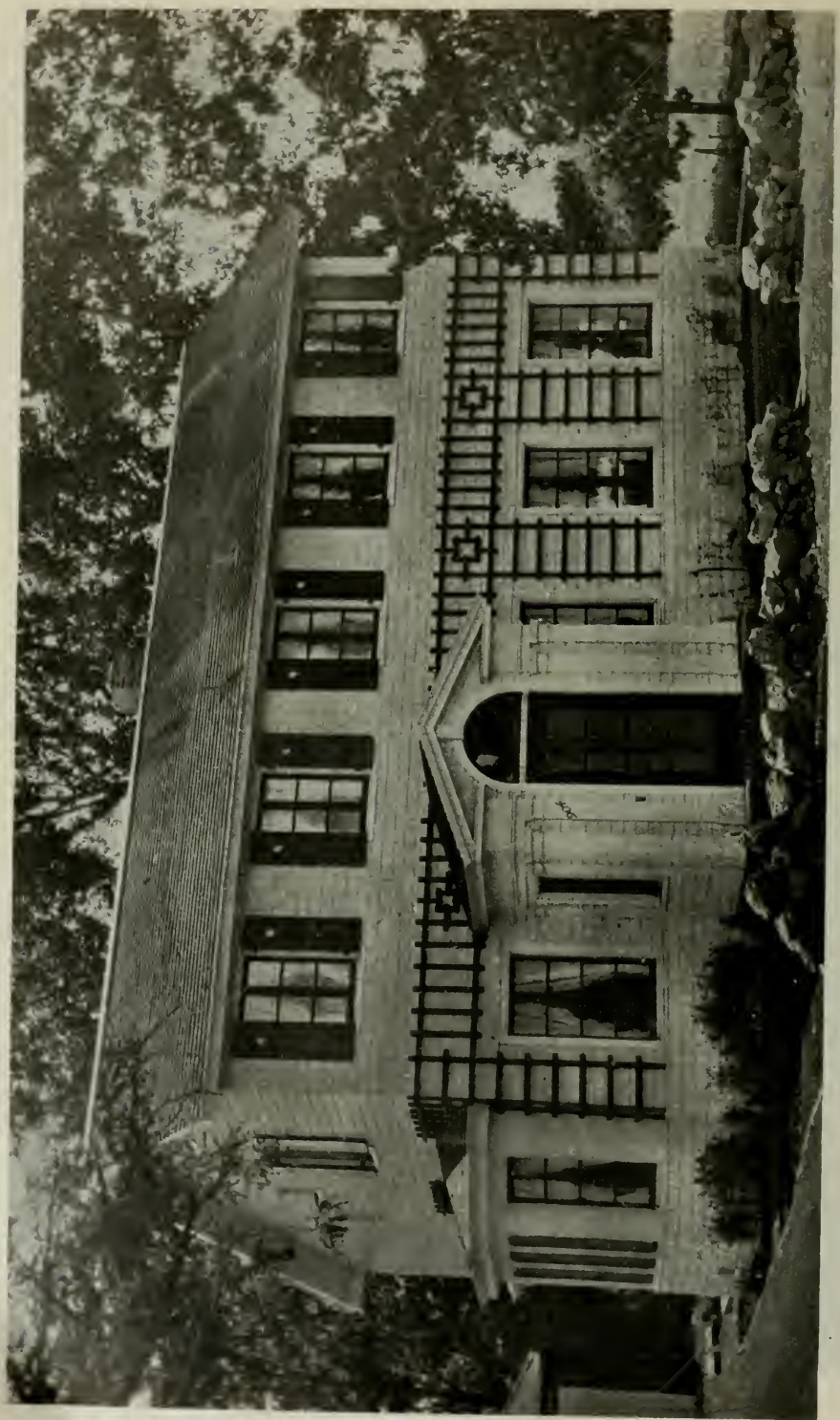
HOUSE FOR MR. H. WM. NELLE,
PIEDMONT HILLS, CALIFORNIA
MORROW & GARREN, ARCHITECTS

HOUSE FOR MR. H. WM. NELLE.
PIEDMONT HILLS, CALIFORNIA
MORROW & GARREN, ARCHITECTS

HOUSE FOR MR. GEO. M. MOTT, JR., BERKELEY
Warren C. Perry, Architect

HOUSE OF MR. PAYSON J. TREAT, STANFORD UNIVERSITY
John K. Branner, Architect

HOUSE FOR DR. HENRY B. WINTRINGHAM, PETALUMA, CALIFORNIA
WARREN C. PERRY, ARCHITECT

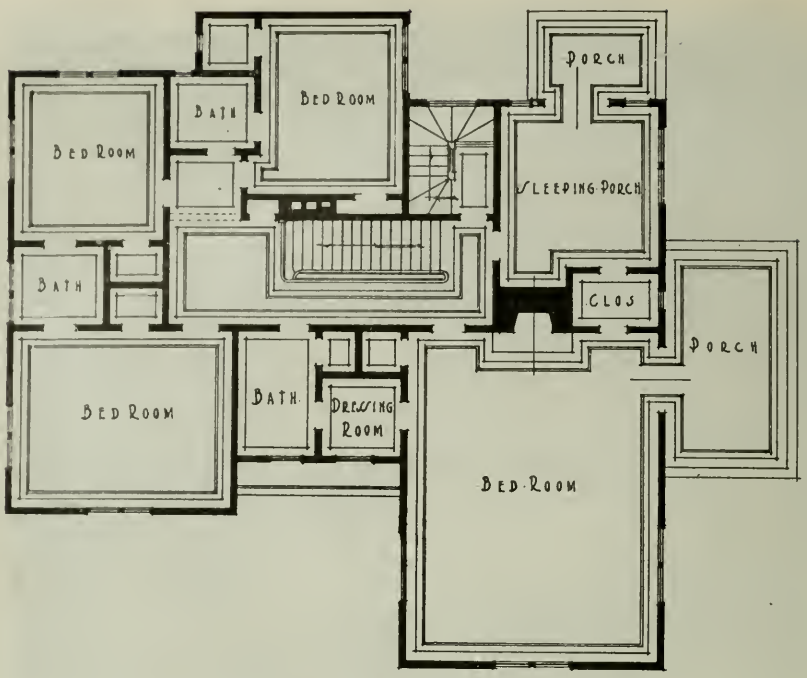


HOUSE FOR DR. HENRY B. WINTRINGHAM, PETALUMA, CALIFORNIA
WARREN C. PERRY,
ARCHITECT

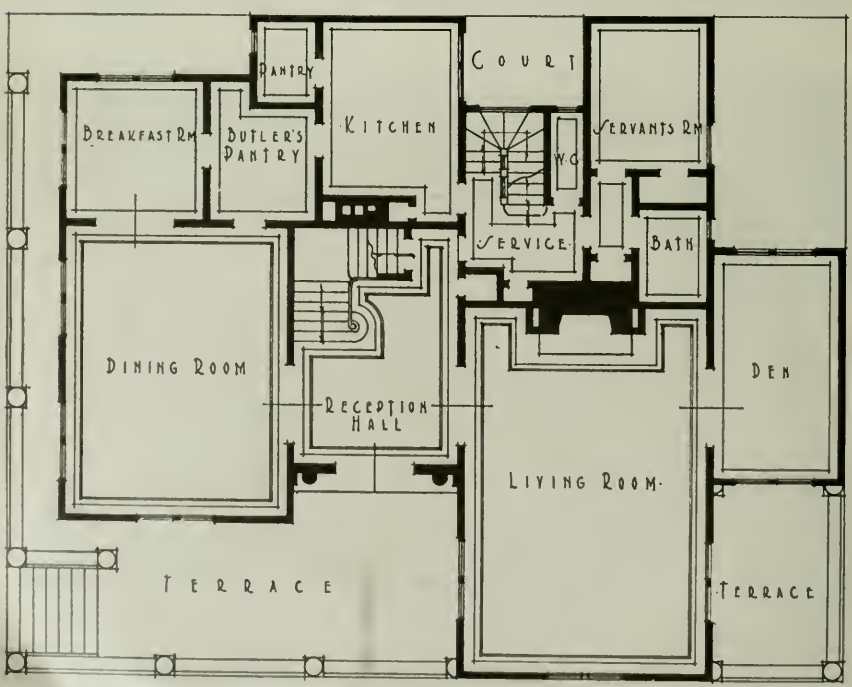
Detail of Entrance

Breakfast Room

HOUSE FOR CAPTAIN F. OLSEN, SAN FRANCISCO
C. O. Clausen, Architect




Plan of Second Floor




Plan of First Floor

HOUSE FOR CAPTAIN F. OLSEN, SAN FRANCISCO
C. O. Clausen, Architect

HOUSE FOR CAPTAIN F. OLSEN, SAN FRANCISCO
C. O. Clausen, Architect

ALTERATIONS TO HOUSE IN SAN FRANCISCO
Smith O'Brien, Architect

COLONIAL HOUSE, SAN JOSE, CALIFORNIA
Warren Skillings, Architect

COUNTRY HOUSE, SAN MATEO COUNTY, CALIFORNIA

ENTRANCE DRIVEWAY, COUNTRY PLACE OF MR. GEORGE M. NEWHALL, HILLSBOROUGH
A good example of the proper use of Lombardy Poplars.

# California Gardening

By DONALD McLAREN *

MUCH has been written of late in regard to landscape gardening and landscape architecture in California, due to the interest which has been created in this subject within the last few years. There is no doubt but what there is a great movement throughout the entire State towards life in the country and people generally are beginning to recognize the value and benefits of the outdoor country life.

Naturally everyone desires grounds and beautiful effects around his home. Values of land in the country are naturally far below those of city lots and people are enabled to acquire considerable acreage for the price of one city lot.

This movement is not only confined to large cities such as San Francisco, but we find throughout the entire State that businessmen of such cities as Sacramento, Fresno, etc., are moving further out into the country all the time and developing country places.

Another factor which has had a large effect in developing landscape gardening in this State is the fact that many eastern people, many who have retired from business permanently, have migrated to California on account of our exceptional climatic conditions, and have established permanent homes here.

Landscape gardening in our eastern States, they being far older than our great State, has naturally been more highly developed and occupies a far

* McRorie & McLaren, Landscape Engineers; San Francisco.

OAK TREE, WITH BROAD, SWEEPING LAWN EFFECT, ESTATE OF MR. GEORGE LENT, REDWOOD CITY, CALIFORNIA

LAKE EFFECT, COUNTRY ESTATE, NEAR MENLO PARK, CALIFORNIA

AN UNUSUAL PLANTING OF GERANIUMS, COUNTRY PLACE IN SAN MATEO COUNTY

FLOWER BORDERED WALK, ESTATE OF MR. FRANK AMES, HILLSBOROUGH, CALIFORNIA

higher status than it does on this Coast, and the eastern man coming to California recognizes this fact and upon establishing himself here looks first of all towards his home grounds. He appreciates the value of our wonderful climate, contrasting it in his mind with the harsh conditions prevailing in the State from which he came and develops his estate accordingly.

Another element which has given a very great impetus to landscape gardening in this State is the fact that the landscape effects at both the Panama-Pacific International Exposition at San Francisco and the Panama-California Exposition at San Diego were such great successes, in fact in each case these were revelations to many of our own people, and will have most lasting effects on the profession in general throughout the entire State.

For our various conditions existing in California, it is absolutely impossible to outline or even suggest in a general way any special form of garden. In some portions of the State, shade should be the dominating feature so far as enjoyment of a garden is concerned, while in other sections it is possible to develop any form of garden which will agree with the house design and right here is where the co-operation of the architect and landscape man is most essential in order to obtain the best results, for it is an undoubted fact that the garden immediately surrounding the house should conform in design with the house itself. This is a feature which is too often lost sight of even in some of our large estates and there is really no excuse for it whatsoever.

We hear a great deal of discussion with reference to formal and informal design of gardens, but if the question is considered from a sensible point of view there should be no difference on this score. To my mind the design of the house should absolutely in all cases govern the style of garden to be created immediately adjacent to the house, after which the landscape treatment should be considered separately. I believe that we all prefer sweeping broad lawns wherever they are obtainable with natural groups of trees and shrubbery surrounding them, but this style of treatment demands large areas which are not always available. It is generally possible, however, given the proper house design, to create a natural effect, even with a limited area, but it is much more difficult to obtain such an effect, and also much more expensive than to treat a small area in a formal manner. It will also be found that in many cases the success of the landscape plan will depend largely upon the use made of existing natural features. For instance, there may be a certain tree which it is most important to preserve, and which must be utilized to the best advantage and this tree will determine the whole design in a small garden or in a certain portion of the garden.

As a matter of fact, a garden, no matter how large or how small, properly treated and laid out, will be found to give a very great deal of pleasure to the possessor and I firmly believe that there will be much more interest displayed with regard to this most important feature of home life within the next few years than ever before. Some of us prefer certain plants while others lean to certain other varieties of plant life, but the majority of hardy species do so well and grow so readily in California that there is abundant room for all to indulge their preferences.

As the writer has so frequently advocated, on account of the wonderfully equable and mild conditions of climate prevailing in our Bay Region, we should utilize more and more evergreen plant materials in our garden work. There is such a wealth of various trees and shrubs which flourish

# Concrete Housing

By IRVING K. POND, Architect*

I HAVE written so much abstractly on architecture and architectural principles that it is good again to get down to hard and fast matters and fix my hypotheses in the concrete. I say "again" for many years ago, as chairman of the Committee on the Allied Arts of the American Institute of Architects, I was the author of a widely circulated report from that committee dealing with concrete as a medium of architectural expression. I have had but slight occasion to put into practice the theories I then advanced, but I have continued to hold, and still maintain them.

Since that time the use of concrete in building operations has grown apace and enthusiasts and specialists have arisen to scatter their words and their works broadcast—sometimes, though not always, the words being more attractive than the works—sometimes the words and works alike bordering on the grammatically atrocious—as for instance when the beauties of cast-rock faced concrete blocks have been urged and the monstrosities themselves have made pitiable what otherwise might have been semi-rspectable structures—"semi," mind you, not "wholly" respectable; for the taste which could advocate, and incorporate into its product, such base imitations could not create or fashion a thoroughly respectable structure. Some two years ago while acting as chairman of a board to adjust and settle perchance, jurisdictional differences between the carpenters, the architectural iron workers and the sheet metal workers of Chicago, I suggested facetiously that the fabricators of imitations should be penalized by giving over to the trades whose products were imitated the erection of all such imitations. Thus stone masons should erect all tin fabrications simulating stone cornices, architraves or entablatures; and do plastering where plaster simulated Caen-stone—one might put it "con"-stone—on walls and in vaulted ceilings. My pleasantry was met with hearty and strenuous disapprobation—each trade wanted to tell its own little lie and to reap the benefits which each felt certain would accrue to it in a world so slightly endowed with the elements of sincerity or of good taste.

So my first item of advice, if I may be permitted to offer advice to a body of men interested in the development of or handling a comparatively new and altogether worthy building material, is to treat the product with respect, to shun and scorn imitations, to recognize limitations, which attach to all materials, as well as to all men, and to work within those limitations. This is not saying that because a thing has been done, frequently and appropriately done, in one material it shall not be done in another or a new material which may be employed with equal propriety.

What these characteristic forms may be is a subject for very searching study and analysis. Possibly through synthesis rather than anaylsis will the characteristic forms disclose themselves. So it was in the past with the old materials—so probably will it be with the new.

Now concrete is a material which lends itself to many kinds of manipulation. It can be cast, poured, pressed, assembled in the shop or on the job; it can be applied in liquid or in solid form to the work immediately in hand. So many are the possible methods of its application—such a diversity of means may be employed toward its legitimate ends, that some of its enthusiastic sponsors see in it a panacea for structural ills and possibly for aesthetic building ills, a substitute for all previously employed building materials—excepting, possibly, door hinges—and a perfect end in itself.

* Read at the National Conference on Concrete House Construction, February 17, 18 and 19, 1920 Auditorium hotel, Chicago.

It behooves those who can impartially survey the entire field to offer both warning and encouragement—encouragement in its legitimate use, warning against its too free employment especially where other materials may better serve the conditions. The economics of the general situation favor concrete and through this factor alone there may arise a tendency toward its too general employment; toward its substitution for other materials which, though perhaps costing more in mere money satisfy the senses and better fulfill geographic and climatic conditions. The cheapness and ease of casting a flat slab of concrete has led certain enthusiasts to advocate the general adoption of a flat slab type of roof in any and all parts of the country (and ultimately of the world). It is advocated for a northern climate because it can very cheaply be made strong enough to hold a load of snow and ice. But that is not what a roof is for—it is to shed snow and ice. The flat slab roof is advocated for a southern climate because the overhang or shade is so cheaply procured. The shade is desired but not at the expense of ugliness which results from unembellished overhangs—and concrete embellishments are expensive. The factors of ease and economy in manufacturing concrete slabs, whether to be applied vertically or horizontally, contribute to a "simplicity" which tends toward stupidity and to a barrenness which begets ugliness. Where the general form is stupid and ugly not much in the way of reclamation can be effected by proportioning of windows or application of superficial ornament. If the mass is interesting and appropriately conditioned, geographically and climatically, slight defects in details will not too seriously challenge the taste, but an ugly mass is fatal.

In spite of the fact that the learned ones will point out that concrete was a favorite building material with the ancient Romans, and that traces of it are found attaching to Greece, Egypt and the ancient Orient, concrete as employed by modern Americans is a new material, the science and art relating to which are not fully developed.

Much has been done to satisfy the conditions of its employment—much more remains to be done. The newness of an art, or the suspected newness of an art, is a sufficient cause for criticism or antagonism in the average American eye. We are the most conservative people as regards art and the Arts on the face of the earth. We will not accept materials and methods on their merits and attempt to develop their intrinsic qualities or worth. Art is about the only line along which we are conservative, however; that is, we conserve very little along material lines—and we do sling dead art about recklessly and embalm its forms in lasting and eternally reinforced concrete in which they appear more dead than heretofore conceivable. The fact that they are embalmed in a vital and vigorous material emphasizes the fact of death. There are those who claim that these dead forms are alive—but only to the dead do the dead live! Concrete is a vital material full of character—let us give it its vital forms.

Because concrete has for so long a time been poured into moulds or forms and because of the coarseness of its ingredients, one of which was stone which could go through a two-inch ring, the earlier designers, and I fear there were architects among them, being dependent upon precedent, and knowing not where else to look, fell upon the crude Spanish detail and broad masses of the early Spanish Missions as representative of what best might be embalmed in concrete. And so Spanish missions distorted into bungalows and cottages and palaces spread like a rash over the face of the country. As technical and mechanical difficulties were overcome and processes refined, the rash itched to take another form of disease and turned into a classic fever, with now and then a touch of Gothic "pains," noted particularly in the traceries on solids and in voids. The fever still burns, the pains still grip. Expensive forms are

built up and destroyed to produce effects which already, *ad infinitum, ad nauseum*, have been better achieved in stone. However, this is not always to be.

The waste entailed in the destruction of specially constructed and expensive forms has become apparent to many concrete users and exploiters, and their efforts to prevent the consequent loss, especially in case of the smaller residences and the houses with which this conference is more particularly concerning itself, has introduced an element which may well call for restraint in its application. For the sake of economy forms are used and re-used in close proximity. When such forms are not perfect in themselves and in utmost good taste, monotony in repetition becomes deadly, and woe is it to him whom cruel fate has condemned to inhabit a unit in an environment so constituted. Life and joy and self-respect must be absent from the dweller amid such surroundings. Even where the forms are charming and singly in good taste, repetition robs them of individuality and unfits them for occupancy by anyone possessed of character and personality. Individuality of character and personality are absolutely necessary in the units which go to make up the mass of a civilized and self-respecting society.

Consequently another injunction, which I offer by way of advice, is to avoid wastage of forms—but even more to avoid the monotony which must follow the unrestrained employment of any "motif," ugly or charming. Introduce spice into life in the way of variety. The principle underlying this admonition is just as applicable to a mill town as it is to the most highly developed suburb. In point of fact little or no distinction should be drawn between the mill town and the "swell" suburb. It should exist possibly only in the size of units; it should not exist in the expression of good taste and mental and bodily comfort. Perhaps I am getting ahead of the age and of the present topic. I hope not.

In spite of the manifold and varied means, methods, processes, applications, manipulations—textures, surfaces and colors appertaining to the use and employment of concrete as a medium of architectural expression and embodiment, I am not certain that I should advise its sole and unlimited agency in housing the activities of any one neighborhood of community. Indeed I am quite certain that I should not so advise; and this not altogether on the ground of a needed variety, but that there are other materials which transcend even concrete as a medium of certain desired expressions of the human spirit in the art of architecture. And I should desire to see no community curtailed of, or denied, the right and power to express the best that is in it in the materials best adapted to that expression. Thus marble, granite, iron, bronze, brick, slate, each one possesses inherent qualities or characteristics not translatable into concrete even through the agency of base and artificial imitation. In the matter of brick, for example, there is scale to the unit which relates the mass to human desire and experience in an intimacy possible with no other material, while in natural color and texture the range is boundless. But, even with all that, brick needs other materials in its neighborhood for contrast and variety, purple-green or slate, soft white of stucco, weathered grey of timbers, with carvings and turnings; and craftsmanship which cannot be imparted by a mould however exquisitely the surface be wrought by the modeler's hand.

I assume that as an architect I am expected to say that the only way to make concrete an accredited and acceptable building material, adapted to all human and aesthetic needs, is to have its essence filtered through the alembic of the architectural profession, or its representatives. If you wish me to say it, of course I will—with reservations.

Now the most stupid of anachronisms are perpetrated by so-called architects; (they really are untutored archaeologists, or rather grave robbers) and the most blatant of modernisms, cut off from all context of history, have

emanated from, again, so-called architects, (they really are unlettered sentimentalists). But I will say that the possibilities of concrete as a medium of aesthetic expression in building may best be apprehended by a sincere architect, with knowledge of modern social conditions and tendencies, working in co-operation with those who know the material at first hand and who also are sincerely working to exploit nothing, but to develop the latent and inherent possibilities of a worthy material. Such architects exist, such material men exist. They should come together. It should be a function of such conferences as this to bring them together.

I must say one word here as to what should characterize the architect in whom the material man and the public may well place their confidence, being assured that his will be leadership—real leadership and not selfish and autocratic domination. That architect must not exploit any material or system but must be able to recognize, and free to employ the most effective and appropriate under the individual conditions. He must sense the sociological, including social, the ethical and aesthetic tendencies of his time so as to aid his client in the expression of them, curbing wasteful, demoralizing, disintegrating tendencies, and aiding toward social unification; diagnosing present conditions and meeting the situation with skill and clarity of vision rather than in applying formulae learned by routine in the schools. The architect should think in advance of the public and see the goal and the way thereto more clearly. Pity the public which follows, and condemn the architect who pursues, the selfish and blind course.

* * *

## Finishing Attic Rooms to Relieve Housing Congestion

HOUSING congestion is so acute that the finishing of attic rooms is receiving attention by Chicago building authorities, especially by Building Commissioner Bostrom. It is estimated that there are in Chicago about 180,000 attic rooms which can be finished and made livable, accommodating 200,000 lodgers. If these rooms are finished and made attractive at an average cost of $600 each and rented for an average of $10 per month, the gross return would represent 20 per cent on the investment, the total investment being $108,000,000.

While housing laws do not permit the cooking or living quarters in the third story of frame buildings, in which most of these rooms would exist, they might permit of sleeping quarters and the rental would be very modest. The rooms could be properly finished and insulated so that they may not be too hot in summer or too cold in winter and halfway measures in remodelling them will not be profitable in the long run. If adequately done, they will assist the permanent resident in meeting higher rent problems and will help relieve the present congestion. The question of finishing attic rooms may be profitably considered by other cities.

* * *

## Paste this on Your Desk

Here is something for all professional men to paste on their desks:

"The artist or the professional man who sells his services for hire is precisely on the same plane as the mechanic who sells his services for hire, in that respect. The quality and value of his services may be different, but he cannot obtain the compensation to which the services are entitled by individual negotiations, except in rare instances; for the sale of service is no part of his professional training, but is a distinct business transaction having no bearing upon the service itself."—Building Review, New Orleans.

ESTATE OF MR. W. L. DODGE, HOLLYWOOD, CALIFORNIA
Irving J. Gill, Architect

# The Estate of Mr. W. L. Dodge, Hollywood, California

By GEORGE D. HALL, Landscape Architect

WHAT impresses an Easterner most in viewing the architecture of California is the great variety of types—or perhaps they should be called type "suggestions"—that are to be found in the homes on the Pacific Coast. The dignity of the Colonial, the secluded English Manor, the heavy curving lines of the Moorish, and the flat roofed severity of the Spanish types are all to be found in Southern California. Whatever individual preference one may have as to type, the fact remains that the variety creates an interest to our sun flooded landscape.

People who live in these homes, however, are Americans, whose creature comforts and desire for all modern improvements must be met, and so all types must be adapted to the standards of American life to be truly successful homes.

This, therefore, presents a problem to the architect, and in the treatment of the grounds the type of the house, with its dominant note, should sound the key for the landscape architect in planning a development in keeping with the character of the house and yet adaptable to the outdoor life of Americans.

Seclusion and a feeling of restfulness are most desirable in a garden, but few Americans want a mournful aspect even though the house is Moorish.

The acre and a half estate which this article attempts to describe is of the Spanish house type, with severity of outline in its flat roof and cement walls, a freedom of mouldings or dust catching projections in its interior, but with large casement windows in the commodious, well appointed rooms that are a frank adaptation to the American love for light and air.

It is not the purpose of this article to describe in detail the interior attractions so admirably carried out by the architect, Mr. Irving J. Gill, of Los Angeles. A picture window with mahogany frame on the second floor through

THE USE OF COCOS PLUMOSA IS A MOST HAPPY SELECTION FOR THIS LITTLE GARDEN
Estate of Mr. W. L. Dodge, Hollywood

which one views the panorama of hills with their ever-changing lights and shades is worthy of an article by itself.

More particularly I would speak of the design and planting of the grounds for which Mr. Wilbur David Cook, Jr., landscape architect of Los Angeles, is responsible.

Leaving the highway, the private drive, with low entrance pillars upon which massive urns were planned, curves gently towards the vine-clad porte-cochere of arched construction, banked on either side with flowering shrubs, as shown in photograph 1.

Between the street and entrance, the views to either side of the drive show large expanses of open lawn, with paths skirting the informal massing of shrubs and trees, deeply recessed in places so as to give added interest and a feeling

of greater extent to the property. Photograph No. 2 illustrates this informal treatment of lawn and shrubbery, but does not show the vine-covered shelter on the axis line of the front door looking through the central arch of the porte-cocherè, where a table and chairs suggest afternoon tea in this quiet, shady nook.

The drive after leaving the porte-cocherè swings around an oval turn, while an offshoot drive, concealed by massed shrubs, terminates in a gravel courtyard in front of the garage, and service entrance.

Stepping stones, lead from this court to the house, traversing a little garden confined by a series of vine-covered arches. Picture 3 shows the outlook

THE SEVERITY OF THIS HOUSE IS RAPIDLY BEING RELIEVED BY VINES
Estate of Mr. W. L. Dodge, Hollywood

from the dining room window beyond this little garden, across the gravel court, and into the grape covered pergola beyond. At the end of this pergola an architectural aviary was planned, but unfortunately this has not yet been built, as much would be added to the interest of the vista by a strong terminal feature.

On the side opposite the porte-cocherè, a glazed porch overlooks the patio, with its pool, while below the patio lies the simple formal garden, the size of which is so well proportioned to the house, and its axial lines so placed in reference to points of observation from within the house, that house and garden form a most happy composition.

In designing the garden Mr. Cook had very definite ideas. Oblong in shape, with high flanking hedges, a straight path plan, quiet restful pool, and simple pergola with small fountain and grill gates. How well these requirements have

VIEW FROM THE DINING ROOM, ESTATE OF MR. W. L. DODGE
Irving J. Gill, Architect

been met to form an attractive composition, the photographs illustrate better than words. The planting scheme so simple and yet so appropriate, one cannot but compliment Mr. Cook on his "restraint" against the so prevalent fault of overdoing, practiced by the commercial landscape architect.

Much planting, or confusion of planting, would have indeed been fatal to the spirit of this little garden, lying so close to its Spanish house as to be an outside living room. One feels that each factor in this garden is placed for a definite reason, and each does its part in a pleasing composition. The oriental touch given by the little mosaic fountain, beneath the wistaria covered pergola, actually impels one to go down the path for a close inspection, and then one notes the opening in the hedge leading to a formal box-bordered rose garden beyond. Beside this there is the vegetable garden, squash court and other features which makes this delightful home in Hollywood so full of interest and charm The knowledge that only five short years ago the property was a waving wheat field adds additional wonder to what skillful design and a congenial climate have accomplished under a close co-operation between Owner, Architect and Landscape Architect.

# Styles for Stucco Modern English Country Houses

By DONALD O. DUNN, in General Fireproofing.

IN these days of quantity production and industrial achievement, it may seem strange to speak of art as vital. Specialization is now the watchword in nearly all lines of endeavor. Even in architecture the structural and mechanical ends of the work have become professions in themselves, with the result that the structural engineer and the ventilating expert are all too prone to look on the architectural designer as a mere "milliner in stone," whose sole function is to please the public by dressing up the steel work with facades and interiors that conform to the style that is in favor at the moment.

Nevertheless architecture is the most vital of the arts with which we, as a people, have to deal; and the work of the men who practice it is a large factor in shaping the public conception of artistic matters generally. Yet a great many people have very limited ideas of architectural styles, particularly as to when various materials can be used without violation of the aesthetic principles of design. Perhaps the best example of this is the adaptation of various styles to stucco.

Stucco is plaster work—either exterior or interior—and may be applied on brick, tile, or metal lath. This seems simple enough, yet the layman will almost invariably limit its associations of this type of construction to bungalows or the commonplace type of small house that has characterized some of our real estate developments.

To those who have traveled abroad, it will suggest the palazzi and garden architecture of Italy and the warmer countries. The Italians have always been sculptors and painters rather than architects. Even the structural grandeurs of Imperial Rome were accomplished largely by Greek artisans under Roman direction and patronage.

The flowering of the Renaissance in Italy saw a group of painters and sculptors impressing their personalities on the times through the medium of architecture.

Michael Angelo, Bernini, Sansovino, Bramante and a host of followers covered their buildings with a wealth of almost painted detail. The interests of economy coupled with a natural instinct for modelling resulted in an eager adoption of stucco and much of the best known Italian work will be found upon examination to be of stucco. For this reason and the fact that the very name is an Italian word, many people associate stucco work almost entirely with Italy. Few indeed will associate it with colder climates, notably England, yet Edwin Lutyens, the prominent British architect, whose work has had so large an influence on the best contemporary in this country, has not hesitated to use it freely.

This is the more noteworthy since Mr. Lutyens was recognized early in his career as a master in the use of materials. He was constantly trying new combinations but always leaned strongly toward those which offered the most plastic medium for the expression of his ideas. Brick, ashlar, chalk, black flint and stucco all served their turn according to the local conditions and to the peculiar requirements of the problem.

Perhaps the most charming example of his earlier work is "Goddards," built for Sir Frederick Mirrillees as a Home of Rest for poor women. It stands

near Leith Hill in Surrey. A more delightful variety, both in plan and in the varied use and treatment of materials would be hard to imagine. The contrast of its chimneys and brick, mullioned windows with the stucco walls is the keynote to its charm.

The house itself is in spirit of the best Surrey tradition of building but with greater freedom in the handling of the materials, and a natural rather than a studied picturesqueness. Narrowly it might be called Tudor, but Lutyens has never allowed himself to be bound by stylistic considerations wherein he differs from the majority of his American contemporaries.

Our national state of mind, architecturally, is the result of a perfectly natural sequence of events.

Our colonial ancestors brought with them to this country the building traditions of their day.

Fundamentally they were English and familiar with the Georgian work of their period. Naturally difficulty was experienced in obtaining building materials for this style of architecture in the colonies. Only the more well-to-do could have bricks and cut stone brought from England and this construction of their buildings soon gave place to wood. Fortunately, skilled ship's carpenters were at hand and the delicate wood mouldings that characterized the best colonial houses were the result of their craftsmanship.

But the Revolution and the War of 1812, broke down many ties with the mother country. Gradually the skilled artisans died off and were replaced by men of a rough and ready type, unskilled in the niceties of European craftsmanship.

The British blockade had forced the development of home industries and the fostering of these enterprises became a national policy after the war. Thus by 1830, our isolation from European influence became almost complete, and little architecture of merit was produced after that date.

The best efforts of our people were devoted to pushing the western frontier across the continent. Our resulting prosperity, unguided by an architectural tradition, resulted in the so-called "Queen Anne" monstrosities of the eighties. The workmen were no longer skilled in the old world sense. Furthermore, their imaginations were not guided by the presence of great buildings of the past. Popular taste could not appreciate the refinement of our colonial heritage. Works of magnitude were undertaken by mere carpenter foremen and the invention of the jig saw coupled with the cheapness of lumber left an indifferent public at the mercy of these men.

Following all this came our gradual re-introduction to the great masterpieces of Europe. Increasing prosperity permitted more European travel with resulting demands for a higher grade of work at home.

Our students commenced to study abroad. After the provincialism of their native land, the beauties of Paris and Rome must have been overwhelming. They returned to a country that must have seemed to them inexpressibly crude —artistically, at least.

Far from the shrines of European art, they strove for the most part for the technical perfection of mere architectural plagiarism. Many of our architects are even now content in merely aping the great monuments of Europe. The resulting tendency has been, of course, towards work that has a classical correctness, but in its timidity lacks any real vitality.

One of the strongest chains that binds the architect to the past is the habit of thought of his public. People who have been accustomed to seeing cornices on buildings cannot be reconciled in a night to a building with no more crowning member than an upended domino. So that few of our architects have been hardy enough to venture far from classical precedent.

Not so with contemporary Old World designers who have grown up in the very shadow of a great architectural heritage. Theirs is the assurance that can only come with long association. Their veneration for the "shrines" is tempered with a familiarity that permits them to work freely and unabashed by their antiquity.

As men of our own time, they have had to adjust their outlook to an infinite variety of problems in the planning and equipment of buildings. Constantly rising standards of physical comfort have demanded of them a machinery of living which would have staggered their predecessors. A maze of piping, vent ducts, conduits and wiring has to be built into walls and floors without marring the artistic effect of either façades or interiors.

How well such practical considerations have been met is evident when we think of the ingenious manner in which these elements have been hidden from view.

This aspect of building has been well served by modern mechanical development. Structural steel, reinforced concrete, hollow tile, sheet metal forms and a thousand other ingenious devices have diminished floor, wall, and column thickness to an astonishing degree. But the element that has aided the architect as perhaps nothing else, is metal lath. Its plastic character has made possible the reproduction of all types of intricate suspended ceilings and vaultings —the while being so thin as to permit of the greatest possible space in housing this mechanical equipment so essential to modern construction. All of which is an aspect of building which quite escapes the layman, as does the tremendous strides that have been made in the technical investigation of materials themselves. Micro-photography and industrial chemistry have taken building material out of the realm of guesswork, just as modern enginering has replaced the old time solution of structural problems. This mechanistic development has been admittedly greater in America than it has been abroad and there has been of late a growing consciousness, not only of this, but of the fact that we—no less than the Europeans themselves—are the inheritors of the great building tradition that traces its origin to Greece and Rome.

Our better architects no longer feel that they must follow the Old World slavishly.

Instead there is a well-defined feeling that we are free to ransack the centuries for the architectural expression which best represents our needs and outlook on life. Correctness in modern design is best shown by a judicious handling of the various motifs, the absorption of their essentials and a fresh expression of the style chosen, "in the same language but with new phrases." Architecture can no more invent a new style than literature can invent a new language. To be guided by tradition, but be stimulated by new needs, is to produce fresh architecture instead of lifeless copies of the old. In this way the architect solves new problems with new materials and from the same fundamentals creates new compositions.

Lutyens has taken the best country house work of England, moulded it to his needs; and, in so doing has set the example for a new generation of architects on both sides of the Atlantic. These men are not only re-establishing principles of traditional domestic design, but they are discovering the right uses of material.

A characteristic example of work carried out in this spirit is the residence for Mr. James H. Foster, designed by Messrs. Walker and Weeks of Cleveland. The house is located in a picturesque section of Ambler Heights, Cleveland. The accompanying illustration was made from a wash drawing by the architects and gives a comprehensive idea of the rambling and informal character of this house. The choice of stucco here was particularly fortunate as the plastic character

of the material lends itself readily to this irregular plan. The house owes its charm in great measure to the fact that its picturesque character is in no sense forced, but is a direct and natural expression of the needs of the household.

The easy transition from the house to the garden with its swimming pool, flower beds, and stone flagged walks is no small achievement in itself and is again traceable to the happy blending of the materials used. This feature once more proved its worth when, five years after building the house, the owner carried out extensive alteration additions, also in stucco.

Many laymen would have thought that a house as pretentious as the Foster residence should have been built of stone or at least of brick, in which case the cost would have been greatly in excess of that actually involved.

There then is economy, charm and facility of expression as well as execution.

The architects have achieved a practically fireproof building by their insistence that the entire basement ceiling be plastered on metal lath. With this vulnerable point protected, the fire resisting qualities of the house compare favorably with those of a much larger structure.

Lastly, this home was built in a climate popularly considered "too rough for stucco." The house erected in 1912, has since stood the rigors of our northern winters to the entire satisfaction of both owner and architects, a tribute to the enduring quality of modern stucco work.

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## Tax Exemption on New Dwellings

TAX exemption on new houses during a limited period of years, as a means of encouraging construction in the present era of inadequate housing facilities and high costs, is a recent idea which appears to have many points in its favor. Whether there are constitutional barriers to such legislation has not been determined. Certain it is that men experienced in finance have advanced this as a solution of the housing shortage problem, and it is receiving serious consideration in New York and in other states.

The elimination of taxes from new dwellings for a term of years would create at once a tremendous incentive for their construction. It might be advisable to extend the exemption to duplexes and to apartment buildings, throwing about the exemption safeguards to make sure that only buildings carefully planned to meet advanced requirements from the view points of space, lighting and sanitation can benefit by the exemption law. This would be particularly desirable for buildings erected in smaller towns, where the building codes are not exacting, or outside of the jurisdiction of the municipalities. It might be feasible to entirely exempt all detached dwellings and partially exempt apartment buildings.

For the moderate priced home with its site, the owner pays on the average in these years, not far from $200 annually in taxes. That applies to average homes in Northwestern cities, with the assessments based on pre-war construction costs of $5,000 or $6,000 for a dwelling. If new homes are to be assessed on the greatly increased cost of today, the increase in taxes will be very marked. Two hundred dollars is 6 per cent interest on nearly $3,500—$3,333, to be exact. Removal of the tax on new houses for a period of five or six years would make the home building idea much more attractive to the prospective builder. It would appeal to him for several reasons.

# Codes Extravagant With House-Building Materials*

By FRED W. LUMIS.

IN studying the art of house building, we discover that the most successful houses do not depend upon ornament, nor any particular kind of material, for their success, but rather upon good lines, simplicity and reasonableness. Any building worthy to be called a house should be built of enduring material, and with proper care should serve three or more generations. Whether the material is wood, or brick, or stone, or concrete—the thought of permanence should always be engrossing, if not paramount.

Much time and thought have been given to the study and examination of building materials. They all have their virtues, their limitations and defects. However, we will consider only the house built with concrete.

Before a house or other building can be erected in any of our cities, an application for a permit to build must be made, a plan must be filed, also a written statement describing the character, materials, use, and location of such building; all showing the purpose of the builder to comply with the requirements of the state and local building laws.

It will be interesting, therefore, to examine briefly the building laws or codes of some of our larger cities, so as to learn, if possible, their various regulations and restrictions as they apply to and effect the concrete house.

In considering the codes which I have mentioned, it will be observed that the requirements are general and not specific. Alike to the warehouse—a thousand feet long—and to the cottage—with partitions serving as diaphragms, extending in all directions, tying and bracing the whole structure, every few feet.

The vertical supports and walls in large structures are designed principally with respect to their compressive strength; but the designer of a concrete house is not permitted to utilize any such economies.

## Building Laws

I have tried to condense a dozen typical, existing codes, retaining only the salient features, reducing them to their simplest terms, and recording their actual mandatory requirements. These are as follows:

### Boston

The tensional stresses in the steel are fixed at 16,000 lbs. per sq. in. The standard mixture for reinforced concrete is 1 of cement, 2 of sand, and 4 of broken stone.

Extreme fiber stress in slabs and other units, 500 lbs. per sq. in. In special cases, as in columns with vertical and hooped reinforcement, 600 lbs. per sq .in. in compression is permitted.

Plain concrete in mass, in compression, 350 lbs. Wall thicknesses for houses: Basement, 12 inches; first and second stories, 8 inches. The use of cinder concrete is permitted in floor slabs, roofs or filling.

### Bridgeport

Allowable steel stresses, high carbon steel, 16,000 lbs.; mild steel, 14,000 lbs. Extreme fiber stress in concrete, 600 lbs. In direct compression, 450 lbs.

Mixture—To withstand a pressure of 2,000 lbs. per sq. in. 28 days after mixing.

Wall thicknesses—Not less than 12 inches, or the same as brick, except slight differences in favor of concrete.

Slag and clean furnace clinkers are permitted.

### Buffalo

Allowable steel stress, 16,000 lbs. per sq. in. Extreme fiber stress in concrete, 500 lbs. per sq. in. Direct compression, 350 lbs. per sq. in.

Mixture—1:2:5 cement, sand and stone, or gravel. Wall thicknesses the same as for brick.

* Presented at National Conference on Concrete House Construction, Chicago, February 17-19, 1920.

Reinforced concrete walls for dwellings may be for one story: Basement, 8 inches; first story, 6 inches. For two stories: Basement, 10 inches; first story, 6 inches; second story, 6 inches. For three stories: Basement, 12 inches; first story, 8 inches; second story, 6 inches, and third story, 6 inches.

### Chicago

Allowable stresses: Mild steel in tension—18,000 lbs. per sq. in.; extreme fiber stress in concrete, 35 per cent of the ultimate crushing strength; direct compression, 20 per cent of the ultimate crushing strength.

Various mixtures of cement, sand and broken stone are prescribed as follows:

(Best) 1:1:2; 1:1½:3; 1:2:4; 1:2½:5; 1:3:7.

The crushing values of these respective mixtures are given as 2,900, 2,400, 2,000, 1,750, and 1,500 lbs. per sq. in.

Wall thicknesses are the same as for brick. Cinders: Clean, screened free from ashes or other matter, are permitted, except in bearing walls, columns or piers.

### Cincinnati

Allowable stresses:

Steel in tension, 16,000 lbs. per sq. in.

Concrete in the following table:

| Mixture: | | Extreme Fiber. | Direct Compression. |
|---|---|---|---|
| Sand and crushed stone | 1:2½:5 | 600 lbs. | 500 lbs. |
| | 1:2 :4 | 700 lbs. | 600 lbs. |
| | 1:1½:3 | 800 lbs. | 700 lbs. |

Allowed load for plain, mass concrete, 200 lbs.

Walls are permitted of reinforced concrete not less than 4 inches thick.

Reinforced concrete basement walls, 12 inches thick.

Walls for first and second stories, 8 inches thick.

Cinder concrete may be used in floor arches or slabs only.

### Detroit

The allowable stresses are:

Steel in tension, high carbon, 18,000 lbs. per sq. in.; mild steel, 16,000 lbs. per sq. in.; extreme fiber stress in concrete, 650 lbs. per sq. in.; in direct compression, 450 lbs. per sq. in.

Mixture, for walls, beams and floors, 1:2:4.

Mixture for columns, 1:1½:3.

Wall thicknesses for reinforced concrete, 66 per cent of that required for corresponding brick walls.

Walls of plain concrete to be of the same thickness as required for brick walls.

Slag is permitted in walls and slabs.

Boiler cinders prohibited.

### Hartford

Steel stresses, high carbon steel (ultimate), 18,000 lbs. per sq. in.; mild steel (ultimate), 16,000 lbs. per sq. in.

Extreme fiber stress in concrete, 800 lbs. per sq. in.

Direct compression—In walls, 500 lbs.; in hooped columns, 850 lbs. per sq. in.

Mixtures, 1:2:4 sand and crushed trap rock, 1:2:4 cinder concrete, is allowed at 50 per cent of the above values.

Concrete blocks, mixture, 1:3:4, to stand a test of 1,000 lbs. per sq. in. at the end of 28 days. Allowable working load, 90 lbs. per sq. in.

Wall thicknesses for houses: Basement, 12 inches; first story, 8 inches; second story, 8 inches.

The approval of concrete block material is given only under the following conditions: A plant must be in full operation when the official tests are made. The names of the owners of the plant must be placed on file with the Building Department.

To make blocks, a license must be obtained. The license may be revoked for the following causes: Willful violation of requirements, dishonest methods, or the use of improper materials.

### Los Angeles

Allowable steel stress—16,000 lbs. per sq. in.

Allowable stresses in concrete as in table:

| Mixture— | | Extreme Fiber Stress. | Hooped Col. |
|---|---|---|---|
| 1:2½:3½ | Crushed rock | 650 lbs. | 800 lbs. |
| 1:3 :4½ | Screened gravel | 520 lbs. | Dir. Com. 350 lbs. |
| 1:7 | Bank or river gravel | Mass Concrete | |
| | without reinforcement | | Dir. Com. 250 lbs. |

Walls—Plain concrete, same thickness as required for brick walls.
Block concrete, same thickness as brick walls.
Reinforced concrete, filler or curtain walls not less than 8 inches thick.
Los Angeles has the following provision for inspection:
The inspector must qualify. He must see that all work and materials comply with the requirements of the ordinance—or stop the work—upon penalty of a fine of not more than $500, or imprisonment for not more than six months, or both.

### Louisville

Steel stress, 16,000 lbs. per sq. in.
Mixture, 1:2:4, broken stone or gravel, to be what is known at 2,000 lbs. concrete.
Extreme fiber stress in concrete, 650 lbs.
Direct compression—In mass concrete, 650 lbs. (unusually high); in columns with vertical reinforcement only, 450 lbs.; in columns with hoops only, 540 lbs.; in columns with 1 per cent to 4 per cent vertical reinforcement and hoops, 650 lbs.
Cinder concrete prohibited for construction work or fireproofing.
Walls—12 inches thick for first and second stories. If only one story high above basement, the first story walls may be 9 inches thick.
Walls of hollow concrete block may be built 10 per cent less in thickness than brick or monolithic walls.

### Minneapolis

A rigid preliminary requirement compels the designer of any reinforced concrete building or structure to carefully compute the dead and live loads and the resulting stresses, and indicate all of them on the drawings.
Steel value, 16,000 lbs. per sq. in.
Mixture—1:2:4, must stand a compressive test of 2,000 lbs. per sq. in.
Extreme fiber stress, 650 lbs. per sq .in.
1:2:4, mass concrete, 500 lbs. per sq. in.
1:3:5, mass concrete, 208 lbs. per sq. in.
Walls for dwellings: Basement, 12 inches; first and second stories, 10 inches each. Mixture, 1:3:5 stone or gravel. Cinder concrete not considered.

### New York

Allowable steel stress, high carbon steel, or cold drawn wire or fabric, 20,000 lbs.; mild steel, 16,000 lbs. per sq. in.
Mixture, for reinforced concrete—1:2:4 or better, with a crushing resistance of not less than 2,000 lbs. per sq. in. at the age of 28 days.
The aggregate to be screened, crushed stone, or gravel.
Extreme fiber stress in concrete, 650 lbs.
Direct compression, 500 lbs. per sq. in. on the concrete, plus 9,000 lbs. per sq in, on the vertical steel reinforcement.
Mixture for mass or plain concrete, 1:2½:5.
Aggregate to be granite, trap rock, or gravel—thoroughly cleaned.
Walls: Foundation walls for residences not less than 12 inches of reinforced concrete, 8-inch walls, 20 feet high, are allowed above the basement; 30-foot walls are permitted, if the first 10 feet in height is 10 inches thick.
Cinder concrete is permitted in floor slabs, in reinforced partitions 4 inches thick, and in plain partitions 5 inches thick.

### Philadelphia

Value of steel, 16,000 lbs. per sq. in.
Extreme fiber stress in concrete, 650 lbs.
Direct compression, 500 lbs.; allowed compression on plain concrete in walls or large piers, 250 lbs. per sq. in.
Mixture—1:2:4, to develop a crushing strength of 2,000 lbs. per sq. in. in 28 days.
Aggregate—Stone, gravel, or slag.
Cinder concrete permitted for slabs and minor partitions, mixture 1:2:5, and should develop a crushing strength of 800 lbs. in 28 days.
For cinder concrete the allowed extreme fiber stress is 300 lbs.
Reinforced concrete will be approved for all types of building construction, provided the design conforms to the requirements of good engineering practice, and the working stresses do not exceed those established in the code.
Walls of reinforced concrete may be 66 per cent of the required thickness for brick walls; the concrete to be reinforced with approximately ⅕ of 1 per cent of the cross section.
Concrete blocks 1:2:3 mixture of sand and gravel may be used in house construction, in walls of the same thickness as brick walls.
A system of rigid tests is established.

### St. Louis

Allowed stresses in steel, high elastic limit steel, 20,000 lbs., mild steel 14,000 lbs. per sq. in.

Extreme fiber stress in reinforced concrete, 800 lbs.

Direct compression, 500 lbs. per sq. in.

Mixture, 1:2:4, reinforced concrete to resist 2,000 lbs. test in 28 days.

The use of a 1:3:5 mixture for plain concrete is permitted.

Hard burned clay is sometimes used as an aggregate, the allowable working stresses being approximately 50 per cent of the allowance for stone concrete.

Walls, same thickness as for brick. Basement, 13 inches; first story, 13 inches; second story, 13 inches thick.

No provision is made for concrete blocks.

Only high grade portland cements are considered in any of the building codes to which reference is made.

### Discussion

In designing the concrete house, safety and economy must be reconciled.

If to embed the steel reinforcement 1½ inches or 2 inches is sufficient to protect it from fire in a store house, or other commercial building, where large quantities of inflammable materials are stored, then ½ inch of fire protection should be enough when the steel is embedded in the concrete walls and floors of a small house, where none of the rooms would contain more than a few armfuls of combustible furnishings.

Where crushed slag is procurable, it might well be substituted for crushed stone in concrete, for use in dwelling houses.

Cinders are variable in their structural and chemical properties, but their use in construction work, in small buildings, might be permissible in localities where other material is difficult to procure, or where they can be obtained in a relatively uniform and clean condition.. They should be crushed and screened, and free from ashes.

Building codes should require every maker of concrete blocks to have a suitable building or enclosure for protection from cold, and heat, and winds, and weather, where he shall properly make and cure his blocks. Licenses should be issued to all block makers. Such licenses to be revocable for causes set forth in the code.

In considering the codes which I have mentioned, it will be observed that the requirements are general and not specific. Alike to the warehouse—a thousand feet long—and to the cottage—with partitions serving as diaphragms, extending in all directions, tying and bracing the whole structure, every few feet.

The vertical supports and walls in large structures are designed principally with respect to their compressive strength; but the designer of a concrete house is not permitted to utilize any such economies.

As an illustration: a good reinforced concrete house, having horizontal dimensions of 30 feet by 40 feet, and an average height above the basement of 20 feet, would weigh, including outside walls, floors, partitions and roof, approximately 10 tons—and if all the floors were loaded to their full carrying capacity of 40 lbs. per sq. ft., it would add about 50 tons more. The weight of the whole building, above the basement, together with its live load, could be safely supported upon one well designed concrete column 23 inches in diameter. In the vertical supporting members in a typical concrete house there is material sufficient to make 25 such columns.

### Newer Codes Needed

Now this is extravagant designing—an unnecessary waste of valuable material. The designers are not encouraged to apply their inventive genius, or even the best of their training and experience, but in many cases are restrained and handicapped by the requirements of existing building codes—codes that are influenced by other codes, which in turn are influenced by older and different methods of building. There is no logical reason why concrete construction should be measured in multiples of 4, 8 or 12 inches, just because brick and stone are figured that way.

To begin with, portland cement concrete is a comparatively new material, and new uses for it are being discovered every day. Until very recently the concrete house was designed on the same lines and with the same details as a brick or stone house. And it was but natural that existing or incongruous building regulations should be applied to it.

But we are progressing. The engineers have led the way, showing us how to build with concrete scientifically and safely. The factor of safety can be very greatly reduced when ignorance, dishonesty, and carelessness are noticeably reduced, and better controlled.

The men who are really responsible for our building codes have worked to get away from archaic methods, have had to oppose ignorance, perversity, and the entrenched interests. They have had to arouse and mould public opinion, and receive its sanction, before they could establish and maintain necessary reforms, or enact building codes.

With a slight improvement in the intelligence and reliability of the average man, and a better and more universal understanding of the proper treatment and behavior of concrete—in all places and under all conditions—great economies both in the material and manipulation can be effected, and satisfactory results obtained.

Our building codes are primarily written and enforced for the dual purpose of protecting human life and the prevention of fire. They must occasionally be revised, so as to comprehend new materials, and new methods.

The concrete house of various types of construction will gradually and shortly come to be considered on its own intrinsic merits, and building codes will contain provisions that will be specially applicable to such houses.

The concrete house, with its unlimited opportunities for style, finish and decoration, has a value and a charm all its own. The designer should bear in mind that he is expressing himself in terms of concrete, and also that it is a medium worthy of his best thought and his noblest effort.

* * *

## Don't Quarrel With the Architect

Mr. A. J. R. Curtis, of the Portland Cement Association, gave this advice to the Concrete Products Association members at their convention in Chicago:

"Don't quarrel with an architect who wants to use your products and requires some special stunt with them. If he submits a design for a house and asks you to figure on it, say, 'Sure, we can figure it.' Demonstrate to him once and for all that your material is one that can be adapted to any design, any conditions; that it is a very flexible material to use—just as flexible as brick or frame. Don't let him think that your material is not as easy for him to use as those other materials. Adapt yourself as much as possible to what the architect asks for; put yourself in the position of the obliging storekeeper, who gives a man just what he wants and asks for, and doesn't try to give him an imitation that is just as good."—Concrete

# Enrichment of Concrete Surfaces with Clay Tile*

## Giving Color to Interior and Exterior Walls with Burned Clay Ornament

By J. H. DONAHEY, in Concrete

TILE ORNAMENT FOR FIREPLACE. OLD KING COLE AND HIS FIDDLERS THREE. NOTE THE PLAIN CEMENT BACKGROUND OF ALL TILE TREATMENT. COURTESY OF CLARENCE H. COLLINGS, CLEVELAND.

THERE was a man in Babylon who once made a brick and those who followed him have been making them the same shape ever since. Many centuries later, it might have been one of the descendants of this illustrious Babylonian, who invented the automobile. It being a pleasure vehicle, which was to travel up and over the hills on the highways, he made it as near like a buggy as he knew how, and some say that he went so far as to attach a socket for the place where the whip ought to go. But look at the automobile today as it seems to float by with its long graceful lines—a thing of perfect utility and beauty.

Slowly we move on. Inventions follow inventions. Soon they are developed and perfected, and man only has to reach over and pull that whip out of the socket, give it a crack, and the old universe, which he has harnessed so well, leaps to his bidding with a bound.

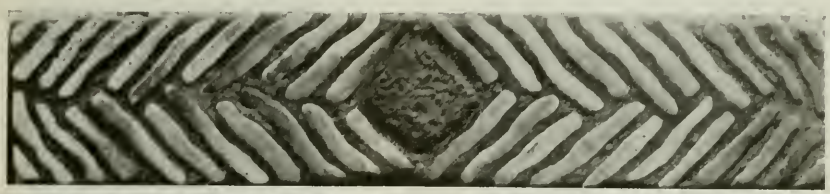
After burned clay came concrete, both older in their natural state than the Ancient Babylonian himself. Concrete, however, is much more workable and plastic than the brick in its present form. Cement taken from the hills and the valleys combined with the pure sand of the adjoining banks and dunes at last produced a material with unbounded limitations. It can be molded into the most delicate and artistic shapes and formed into structures more mammoth than those left by the ancient Egyptians—it's very nature permitting application to almost any form.

But like the artist, with pigments in hand, who stands before his gray canvas, after having outlined his intended picture, we feel that color is needed to offset the gray and uninteresting flat tones of the endless material. So we go back to burned clay, the sister pigments of nature, to make the picture complete. The soft gray tone of cement is beautiful if complemented or balanced by any other natural material—and what is better than burned clay with its great variety of warm, natural colors, elements of the earth? Too much

* Illustrations courtesy of Unitile Co., Columbus, Ohio.

of either is not as interesting, for we see it everywhere at every turn. On the other hand, a happy blending of both is very pleasing to the eye.

Little or no attention has been paid to the union of these two materials, for the fact that much time and interest has been given to produce a strong, workable structure at the lowest possible cost, with but slight regard for the appearance of the finished object, or its artistic effect when completed. It is for this reason that we hear criticism of concrete constructions. They are un-



OLD ENGLISH HERRINGBONE BORDER. THIS BORDER IS TWO FEET LONG AND CONTAINS FOUR SEPARATE UNITS OF TILE. UNDER THE OLD METHOD EACH OF THE ABOVE UNITS WERE PLACED SEPARATELY.

OLD ENGLISH HERRINGBONE IN SIX-INCH BORDER. EACH UNIT TWELVE INCHES LONG

finished. They need color, and I venture to say, with the proper balance of these two of nature's products, combined with a proper conception of design, what looks now like a cheap poured product would take on the appearance and dress of a perfect palace in comparison, if properly treated with clay ornament.

If you talk to the tile manufacturer he will say it should be all tile; the brick manufacturer will tell you that brick is the material for your structure. The concrete man can pour it for you while the other two are thinking about it. In some cases all of them are right; but the architect knows that if he could have at his command these three mediums he would choose concrete with clay ornament, for it is so plastic that it lends itself to his every purpose. The concrete permits of good architectural lines, and the natural burned clay has unlimited, elastic possibilities, both combining in a harmonious unison.

UNIT TILE IN A GAY CEMENT BACKGROUND.

Some tile manufacturers have made a careful study of this situation and have evolved and produced ornament for this very purpose, knowing full well that concrete needs this finishing touch before it can take its place at the head of the structural gods and go down to everlasting posterity.

Tiles are now being made under a new method, which allows of greater elasticity and economy in setting, thereby reducing the cost of construction, a factor that has heretofore had much to do in preventing this union of necessity and art.

Under the old plan it took much time and expense to inlay each little tile separately, but ornament is now being made, one might say, by the yard in all

FLOWER POT WITH FLYING DUCKS IN TILE.

TILE DECORATION OF A CONCRETE JAR.

the colors of natural clay and of almost every design desired. It has now become a very simple matter to tile in any panel or border or to place an insert of this material.

When the architect once gets before him these two servants, working side by side, it is a fair prediction that concrete will take a far greater position of worth and merit among the other building materials which are now so commonly used. Not only will concrete be used in structures of necessity, but for beautiful homes and for monumental effects of a high artistic value.

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## Objections to Incorporation of British Columbia Architects

Many objections to the bill to incorporate the British Columbia architects were urged before the private bills committee. Mr. Jackson, the chairman, read telegrams from British Columbia Manufacturers' Association, the General Contractors and Master Builders' Association, the Imperial Oil Company and the American Can Company of Vancouver, all objecting to various phases of the bill. The Imperial Oil Co. and the American Can Co. stated that their plans were drawn at headquarters and the bill would compel them to employ a local architect who might not understand the peculiar nature of their business. The objection of the master builders was that builders competent to design buildings under the value of $5,000 would be put to the expense and trouble of employing architects for work they could do themselves.

# Department of Safety

## Conducted in the Interests of the Building Public and With the Co-operation of the California Industrial Accident Commission

## Lap Seam Boiler Explodes

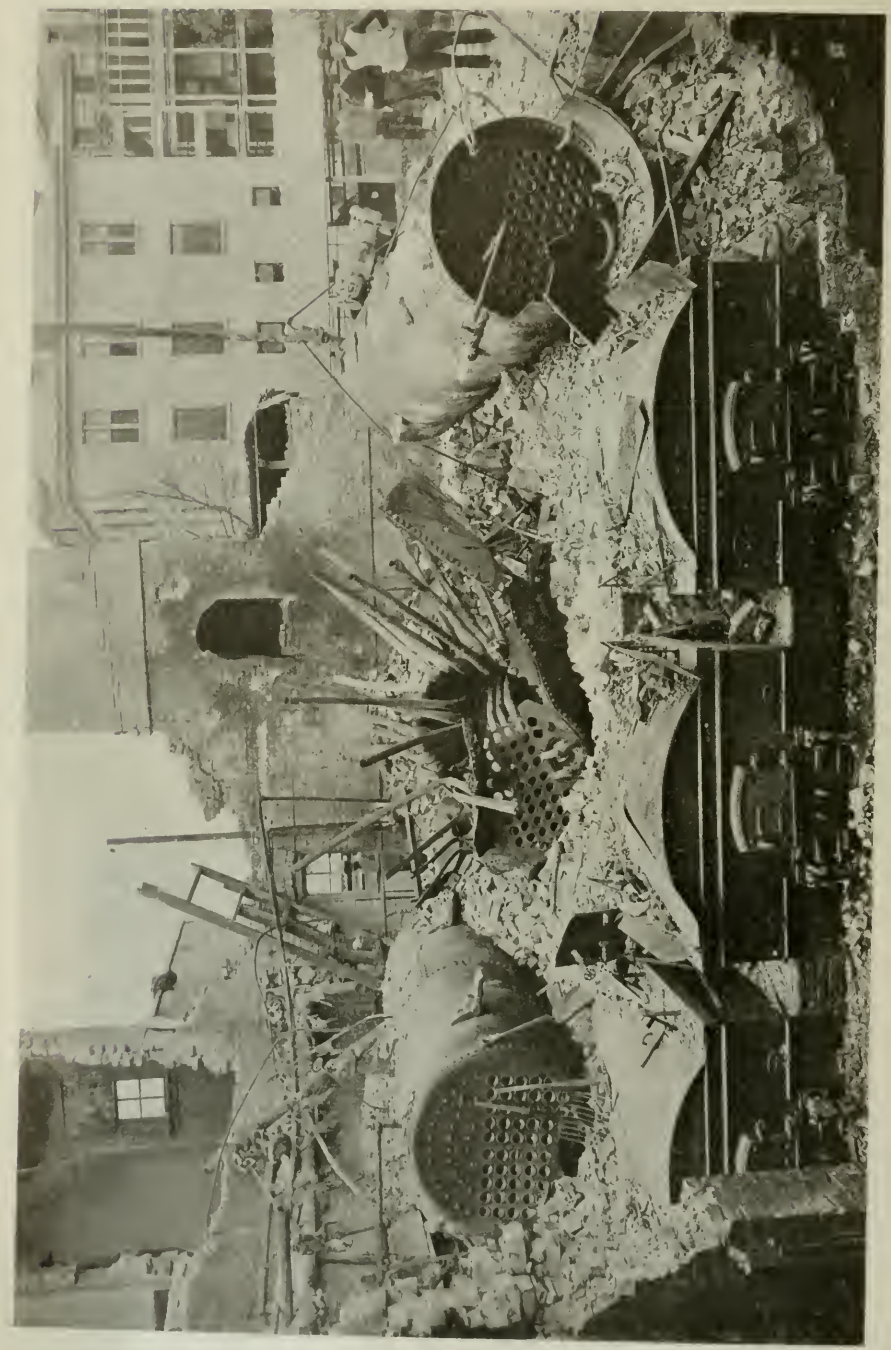
By R. L. HEMINGWAY, Chief Boiler Inspector.

THERE is an old proverb which says that there is a Providence that takes care of fools, drunken men and children. The purpose of this article is to endeavor to show that while Providence may continue to protect children, it is possible to overwork the protection in the other cases.

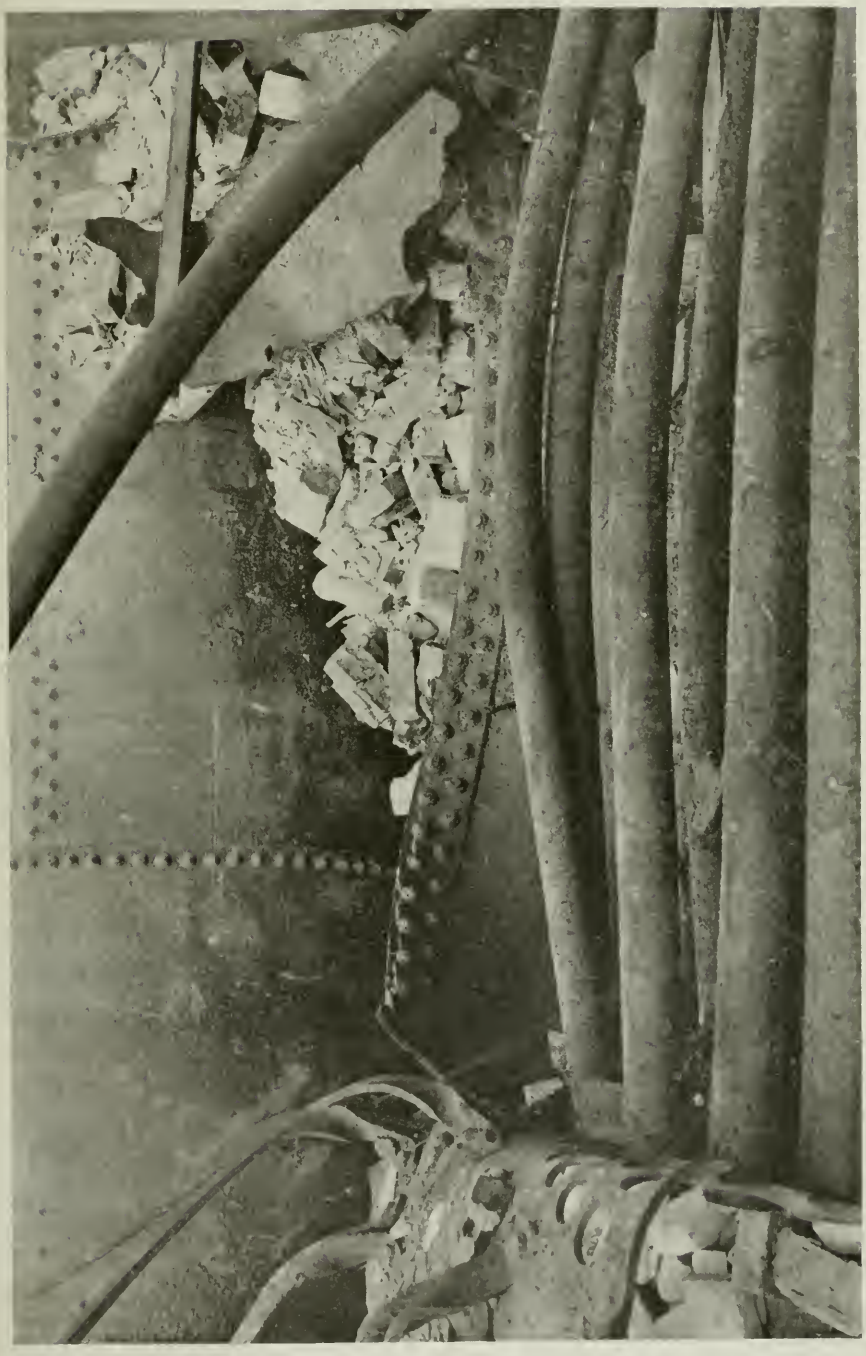
In the issue dated October 21, 1919, "Power" published an article entitled "Lap Seam Boiler Explodes." This article describes how the middle boiler of three in the power plant of the Sisters of St. Francis of Assisi, at St. Francis, Wisconsin, exploded one night after the fire had been banked and the attendants had all gone home.

The boiler in question was sixty inches in diameter by fourteen feet in length, built of flange steel 3/8-inch thick, having a tensile strength of 60,000 pounds per square inch. The boiler was constructed in 1904. The longitudinal seams were of double riveted lap joint type with 7/8-inch rivets driven in $^{15}/_{16}$-inch holes, spaced 3¼ inches apart, giving a joint efficiency of approximately 71 per cent. The spring loaded safety valve of this boiler was set to blow at

THREE-EIGHTHS INCH PLATE EATEN AWAY ALMOST ENTIRE LENGTH OF BOILER



GENERAL VIEW OF THE WRECKAGE.



"CLOSE-UP" VIEW OF RUPTURED SHEET.

95 pounds pressure, giving the boiler at the maximum allowable pressure a factor of safety of 5.6. The exploded boiler, as well as the other two, had been examined on September 22, 1919, by an insurance inspector, and about a month later (to be exact, October 25) had been washed out and cleaned by the engineer in charge. The cleanliness of the boiler and its freedom from other defects indicate that it had received good attention in every way.

Boilers Nos. 1 and 3 were not in service at the time and the exploded boiler was only being used for supplying a light load and for heating the premises.

At about five o'clock on November 2, the pressure reached 95 pounds and the safety valve operated freely, as it had done daily for a week or more previously. After the accident the safety valve was found to be perfectly free and unobstructed. At eight o'clock that night, the fire was banked, the steam having been shut off from the buildings. The pressure gauge at that time indicated forty pounds pressure and water stood at three gauges. Two hours later the boiler exploded quite violently, demolishing the greater part of the boiler room, as shown in the illustration, and damaging the laundry building wall adjacent to the boiler room.

It will be noted that boilers 1 and 3 were forced from their setting, while parts of the boiler room equipment were projected to a distance of four or five hundred feet. Providence again stepped in and no one was injured, although the property damage amounted to about ten thousand dollars.

Examination of the exploded boiler developed the fact that the front course of the shell plate had failed from the head seam to the girth seam, a distance of 6 feet 9 inches, along the rivet holes of the double-riveted lap seam, as plainly seen on the "close-up" view of the sheet. The crack probably started at a point about five feet from the front head, where the plate was not homogenous, and gradually extended to the front head seam, working deeper into the sheet until separation occurred.

That part of the seam between the laminated spot which did not appear on the surface, and the first girth seam, contained no indications of an old crack, and by the reduction in thickness and elongation, the material would be judged to be of good quality. The seam had given no warning of its condition, as there had been no leakage, and in fact the boiler since its installation had never been repaired in any way.

It will be seen from the photograph of the ruins, that the force of the explosion was a clear indication of the amount of water contained, so that the low-water theory may be discarded. As is usually the case where the failure occurs above the horizontal diameter, the force was expended principally upward, and the boiler was moved but a short distance from its proper position. The banked fire remained on the grate of the dutch-oven furnace, the latter being practically intact.

Of course no one can state positively what took place after the fire was banked and the flow of steam from the boiler ceased, but those who have had to do with boiler operation will easily conclude that with hot furnace walls, a freshly banked fire, a boiler filled with water, and steam at 50-pound pressure, and the steam produced being no longer used, there would be an increase in pressure which under certain conditions might reach the amount to which the safety valve is set—in this case, 95 pounds.

The boiler had safely withstood 95 pounds pressure at 5 o'clock, but had probably been on the verge of failure for several days.

Providence came very nearly being overworked right here in California recently, when an inspector was called upon to examine a boiler in a well-known orphanage. In this case, the dimensions of the boiler were almost

identical with those of the exploded boiler mentioned above, but as the illustration on the previous page shows, it differed in this respect, that the condition of this boiler was anything but good. As a matter of fact, the 3/8-inch plate had been eaten away for almost the entire length of the boiler, until in places it was barely 1/16 of an inch thick. Notwithstanding this weakened condition, it had withstood a preasure of 95 pounds for many months.

One can only conclude that Providence was strictly on the job, as otherwise many lives of orphans and those in charge would undoubtedly have been taken. It is little short of a mystery how this boiler ever held together under the pressure at which it was being operated.

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* *

## Chicago Unions Ban Portable Houses

Chicago Union carpenters have refused to set up portable houses made by union labor in Quincy, Ill., and shipped to Chicago. Moreover if the houses are erected without the aid of union carpenters, plumbers will not be allowed to put in the plumbing. The only reason given for the stand taken by the Chicago union is that "the portable house is a project against the interests of our organization." The president of the carpenters' union further declares "the real union made house is made by union carpenters here, not out of town."

If the carpenters' union can stop the erection of a portable house because it is not made in the town where the owner desires to erect it what is to prevent other unions putting into force the same principle? asks Southwest Builder and Contractor. The bricklayer could refuse to lay brick shipped from another town, the painters could refuse to use paints not manufactured in the city where the work is to be done, and so on ad libitum. And then it is only a step further for the carpenter to say he will not put wood work in a brick house and for the bricklayer to say he will not build a chimney in a frame house. All with the possible final deduction that no houses could be built "at all."

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* *

## Wages per Hour for an 8-Hour Day in Building Trades in Middle Western Cities on March 1st, 1920

| | Common labor. | Bricklayers. | Carpenters. | Masons. | Plasterers. | Structural steel workers | Plumbers. | Gas and steamfitters. | Roofers. | Painters. |
|---|---|---|---|---|---|---|---|---|---|---|
| Chicago | $0.75 | $1.00 | $1.00 | $1.00 | $1.00 | $1.00 | $1.00 | $1.00 | $1.00 | $1.00 |
| Detroit | .65-.90 | 1-1.25 | .75-.90 | 1-1.25 | 1-1.25 | 1.00 | 1.25 | 1.25 | .80-1.00 | .80-.90 |
| Peoria | .... | 1.00 | .87½ | .... | .... | .85-$1 | .... | .... | .... | .... |
| Indianapolis | .... | 1.00 | .75 | .... | .87½ | .... | .... | .... | .... | .... |
| St. Louis | .60-.70 | 1.12½ | 1.00 | 1.12½ | 1.12½ | 1.00 | 1.12½ | 1.12½ | .85 | .75 |
| Gary | .75 | 1.00 | 1.25-.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Denver | .... | 1.25 | 1.00 | .... | .... | .... | 1.00 | 1.00 | .... | .... |
| Pittsburgh | .50-.60 | 1.12½ | .90 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | .... |
| Milwaukee | .75-.80 | 1.25 | .70-.90 | 1.25 | 1.12½ | .... | .... | .... | .... | .... |
| Kansas City, Mo. | .... | 1.12½ | .85 | 1.00 | .... | .... | .... | .... | .... | .... |
| Grand Rapids | .50-.60 | 1.10 | .90 | 1.10 | .75-.85 | .... | 1.00 | 1.00 | .... | .75 |
| St. Paul | .50 | 1.00 | .75 | .... | .90 | .87½ | .87½ | .87½ | .... | .75 |
| Minneapolis | .50 | 1.00 | .75 | .... | .90 | .87½ | .87½ | .87½ | .... | .75 |
| Omaha | .50-.87 | 1.12½ | 1.12½ | .... | .... | .... | 1.12½ | .... | .... | .... |
| Cleveland | .57½ | 1.00 | .90 | .... | .90 | .... | 1.00 | .... | 1.00 | .80 |
| Cincinnati | .... | 1.00 | .90 | .... | 1.00 | .84 | .80 | .81¼ | .... | .75 |
| Columbus | .... | .87½ | .85 | .90 | .87½ | .... | .... | .... | .65 | .... |
| Toledo | .... | .... | .... | .... | .... | .... | 1.00 | .... | .... | 1.00 |

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## *FINANCING HOME BUILDING*

Financing home building and its relation to the development of the business of contractors and material supply concerns makes the building and loan association a most important factor in the home building industry in these days of house congestion. The housing needs of the country are real and a serious problem and relatively serious is the financing of such building. Home building is the problem of the individual, although houses may be constructed in groups, they must eventually be disposed of to the individual and obligations for payment assumed by the individual borrower. Architects, building contractors, and material supply concerns have only been interested in the local building and loan movement to a very nominal extent. A wider general understanding of possibilities of working together would be to mutual advantage, as their interests are centered in the same individual—the home-builder—yet each is interdependent on the other. If the prospective home-builders cannot secure loans on terms within their income, they cannot get funds to build with, and neither builders nor supply men will have orders for their commodities. Therefore their extension is of service to:

First: The home-builder, who obtains a loan to build on terms of repayment that make it possible for him to build, and eventually at a cost less than commercial interest rates.

Second: Contractors and material houses, receive contracts to fill.

Third: The building and loan association, in extending its service to inculcate thrift and home-ownership by securing borrowing and investing members.

Fourth: The community, in acquiring taxable invested wealth, and a home-owning, self-supporting citizen.

The United States Department of Labor has found the housing situation sufficiently serious to warrant a complete study to arrive at the most practical methods to be recommended in extending necessary credit to wage-earners for the purpose of building and supplying homes. After a thorough investigation of all types of mortgage

loan institutions the conclusion reached was that the United States League of Local Building and Loan Associations represented the type of institution best adapted to supply credit to the average home-builder on the most economical plan, and also, that adequate facilities to accommodate the financing of anticipated building, was at hand in almost every State through the medium of building and loan associations.

As a result of a meeting of leading building and loan representatives called by the Department of Labor, at which it was sought to be determined how the building and loan associations of the country might assist in stimulating the building of more homes, which were then and are still urgently needed, a plan was evolved to provide for a system of Federal Building-Loan banks, the details of which are contained in a bill now before Congress. In a general way the bill follows the Federal Loan Act established to meet the financial needs of the owners of farm lands, and the Federal Reserve act, which provides for the financial requirements of the National and State banks and the trust companies. There is this important difference, however, between Federal Farm Loan banks and Federal Building-Loan banks herein proposed, namely, whereas in the farm loan act there is a provision for the secretary-treasurer to subscribe to the capital stock of the Farm Loan banks, with funds from the United States Treasury, the capital stock of Federal Building-Loan banks is to be subscribed for only by the building and loan associations in the several districts, so that not a dollar of the public funds will be required to finance these proposed banks. The building and loan associations will simply be placed in a position where they will be able to help themselves. The Federal Building-Loan banks are to supply the financial needs of the building and loan associations for long-time funds by issuing tax-free bonds against first mortgages on loans deposited with them, 25 per cent in excess of the loan requested. This will make liquid the mortgage assets of these associations and will enable them to provide such additional amounts of money to members for home-building purposes.

We feel that we are justified in requesting for the wage-earners what Congress has already enacted for the farmer and for the business man. At the annual meeting of the United States League of Local Building and Loan Associations, the proposed legislation was considered and very fully discussed by the delegates representing State leagues in various parts of the country, and the convention indorsed and approved the movement inaugurated by the Department of Labor, which resulted in the introduction of S. 2492 and H. R. 7597, known as the Calder-Nolan Bill in Congress.

We feel warranted in saying that the building and loan associations of the United States can, through the medium of a bill like this, if enacted, be successfully employed in relieving much of the shortage which now exists for funds for home-building purposes.

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### *HOUSING CONDITIONS IN NEW YORK*

That rent profiteering should be regulated without hampering the ownership of property is the attitude taken by the Real Estate Board in New York, according to advices from the State Capital. The legislative representative of this board is quoted as saying, "The housing situation in New York City and in every city in the United States is acute.

"The high wages forced by organized labor has drawn heavily upon the country workers and has overcrowded the cities. In New York State alone there are over 25,000 vacant farm houses as a result of the drift toward the cities, whereas, in contrast, in New York City 200,000 apartments are needed to meet the demand.

"Crowded conditions necessitated the construction of 50,000 apartments in 1919 and 1920 in New York City, yet last year only 1183 new apartments were built. In 1915 there were 934,822 apartments in Greater New York; in 1919 there were 982,015, an increase of only about 44,000 in five years."

### *BUILDING TRADES WAGES IN THE MIDDLE WEST*

Building trades workmen in Chicago are better paid on the average than artisans in similar lines in most middle western American cities, concludes the Chicago Daily News after making a telegraphic survey of seventeen of the principal cities in its section of the country. Chicago building trades workers are receiving $1.00 an hour. Nine of the seventeen cities are paying more for bricklayers and seven are paying a like amount. Carpenters receive $1.00 an hour in Chicago and are getting higher wages in two other cities, Gary and Omaha, while in twelve cities they are paid less. Plasterers, structural steel workers, plumbers, gas and steam fitters, roofers and painters as a rule are receiving higher wages in Chicago than in other cities. Peoria and Detroit are paying bonuses to secure men. Gary scales are based on Chicago scales, although premiums are being paid there for workmen. Carpenters at Cincinnati are striking for $1.00 now and $1.25 on May 1; Toledo has a new scale effective April 1 with 25 per cent increase; Omaha, which now pays carpenters, bricklayers and plumbers $1.12½ has an increased scale effective June 1.

A number of the cities state that they have no labor shortage now in these trades, but expect one when big building commences in the next few weeks. Exceptions are Grand Rapids, Michigan, and Toledo, Ohio, where it is said that there is a scarcity in all trades and it is difficult to employ men. Grand Rapids pays carpenters 90 cents and bricklayers $1.10. The Daily News bases all its figures upon the eight-hour day, and presumably started its investigation because of the assertion of the Building Trades Council that the building trades workers in Chicago have been going to other cities to secure higher wages.

### *OPPORTUNITY FOR CALIFORNIA ENGINEERS TO SERVE THE PUBLIC*

Road building programs in several states are not likely to be carried out in full because highway bonds bearing low interest rates are not readily marketable in these days of high interest. The California Highway Commission, for example, had planned to spend about ten million dollars this year, but the highway bonds are limited to 4.5 per cent interest. When U. S. "liberty bonds" can now be bought at prices that yield 5 per cent, there is little chance of marketing state bonds that yield less. Moreover, there are millions of dollars' worth of public utility bonds offered for sale at prices that will yield the investor 6 to 7 per cent.

It seems to us, says Engineering and Contracting, that the engineers of California should take the initiative in a publicity campaign to bring about an increase in the interest rate on state bonds. To accomplish this may require a special session of the legislature. It may even involve a vote of the citizens of California. But in any case the public expense will be warranted by the public benefit that will accrue from the carrying out of the forty million dollar state highway program.

Let no one be deluded by the hope that interest rates will soon return to the old level. Every great war has been followed by high interest rates that have remained high for years.

We agree with Engineering and Contracting that if California waits a year to sell state highway bonds, she will still face more years of waiting after that.

We agree with Engineering and Contracting that the engineers of California should secure the aid of automobile clubs, chambers of commerce and the like, in a publicity campaign that will speedily bring about the sale of highway bonds bearing interest rates that will attract buyers.

### Likes It Best

Editor The Architect and Engineer,
San Francisco, Cal.

I did not realize that my subscription to the Architect and Engineer had not been paid. I apologize for the oversight and thank you for reminding me of it.

You are publishing an excellent magazine and I really think I enjoy it more than any of the other architectural periodicals to which I have subscribed.

Yours very truly,
J. Westervelt.

New York.

# Notes and Comments

**New Building Code Needed**

A possible solution to the high rental situation in San Francisco may be found in an ordinance to permit the destruction of household refuse and garbage on the premises, which has been introduced by Supervisor William S. Scott.

Mr. Scott is of the opinion that high cost of living and abnormal rentals merely reflect the result of causes. Remove the causes, said the supervisor, and the result automatically disappears. Mr. Scott has devoted considerable study to the subject and he says he has found many instances where San Francisco has failed to keep abreast of the times in its legislative program—particularly in respect to ordinances regulating the construction and operation of buildings. Scientific progress made in the evolution of construction offers many new types of construction and materials and devices that could be used as substitutes and thereby reduce the cost of building without decreasing the essential features made for the safety and comfort of the occupants, according to Mr. Scott, who goes on to say:

"There is no logical reason for regulating building with restrictions of ten and twenty years ago. To illustrate: In 1897, or twenty-three years ago, there was passed an ordinance regulating the destruction of garbage. Time and again the odoriferous subject has been aired before the people. The health officer again directs our attention to the matter and states his office is overwhelmed with complaints of exorbitant rates charged for scavenger service. Accumulation of waste also has been the cause of many avoidable fires. I have, therefore, introduced an ordinance to make permissible the destruction of household waste and garbage on the premises. This ordinance will, no doubt, be welcomed by our citizens because it provides the destruction must be by means of a process of incineration that deodorizes the gases and with a brick flue through which are conducted all products of combustion to the outer air. This method of destruction makes for an economy, sanitation, eliminates the insanitary receptacle and does away with the need of conveying garbage through the public thoroughfares with its attendant evils and extortionate costs therefor."

Supervisor Scott has conferred with one of the foremost authorities on the subject of housing and building legislation problems—Mr. Mark C. Cohn, with offices in the Foxcroft building, San Francisco, and formerly Director of Housing and expert for the State of California and more recently the Federal Government's representative in the West in charge of war housing and fair rentals. Mr. Scott has been advised by Mr. Cohn that the ordinance is thoroughly in accord with the State Housing Act and in line with advanced legislation now in force in many large centers of population. An entirely new building code, in the opinion of Mr. Scott, would tend to reduce high costs of building and thereby encourage new projects to relieve the acute shortage of housing accommodations in San Francisco.

## Architects of Oakland Schools

The following San Francisco, Oakland, Berkeley and Alameda architects have been selected to design some of the new school buildings in Oakland, under the recently authorized $5,000,000 bond issue. They will receive 3½ per cent of the total cost of the building. Preliminary sketches, specifications and full size details will be prepared by the Construction Department under Mr. C. W. Dickey, who, with Mr. Marston, will supervise all work. The heating, plumbing and wiring plans will be prepared by Mr. Atkins, while Messrs. A. M. Everett and George Wagner will be in charge of the estimating.

The list of architects and the cost of the building assigned to each follows:

| | |
|---|---|
| J. J. Donovan | $550,000 |
| Reed & Corlett | 500,000 |
| Wm. Knowles | 300,000 |
| E. W. Cannon | 290,000 |
| Washington J. Miller | 275,000 |
| Edw. T. Foulkes | 250,000 |
| L. S. Stone | 225,000 |
| W. H. Ratcliff, Jr. | 150,000 |
| W. H. Weeks | 185,000 |
| Bakewell & Brown | 100,000 |
| Harris Allen | 75,000 |
| M. V. Politeo | 60,000 |
| Hamilton Murdock | 50,000 |
| E. D. Voorhees | 50,000 |
| B. J. S. Cahill | 50,000 |
| Miller & Warnecke | 50,000 |
| Earl B. Scott | 40,000 |
| Sidney B. Newsom | 40,000 |
| Horace G. Simpson | 40,000 |
| Arthur S. Bugbee | 25,000 |

## American Institute of Architects

(ORGANIZED 1857)

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# With the Architects

## Building Reports and Personal Mention of Interest to the Profession

### Twenty Stories

The Standard Oil Company's new building to be erected on the southwest corner of Sansome and Bush streets, San Francisco, from plans now being prepared by Mr. George W. Kelham will be twenty stories high, instead of twelve, as originally planned. It will be the largest and tallest office structure in San Francisco, and will cover ground area 137.6 on Montgomery street and 206 feet on Bush street. It will be divided into departmental offices for the company's Pacific Coast business. It is said the building will cost close to $5,000,000. Construction will be steel frame with exterior of stone, pressed brick and terra cotta. Interior floors and walls will be of fireproof material—either hollow tile or reinforced concrete. All trim will be metal. The building will be constructed by the P. J. Walker Company of San Francisco.

### Compromise Declined

A suit by Mr. John J. Foley, architect of San Francisco, to recover $6,240 fees from Mr. Francis J. Sullivan, husband of the late Alice Phelan Sullivan, for plans furnished for the Carmelite Monastery in Santa Clara county, went to trial before Judge Sturtevant in San Francisco the past month.

Before the taking of testimony began Sullivan offered to compromise the suit for $2,000, but counsel for Mr. Foley told Judge Sturtevant they could not accept this offer inasmuch as their client had expended more than that sum in preparing the plans.

### Piedmont High School

Piedmont has voted $250,000 for the construction of a new high school building. While no architect has been appointed as yet, it is stated that the school board has under consideration architects who have been identified with other public work in Piedmont. Among these is Mr. Albert Farr of San Francisco.

### $200,000 High School Group

Messrs. Allison & Allison, Hibernian building, Los Angeles, have been commissioned to prepare plans for a $200,000 high school group at Alhambra.

### Must Pay Architect His Fee

The supervisors of Madera county must pay Mr. Eugene Mathewson, architect of Fresno, $3000 for plans prepared by him for a county hospital building, in the opinion of Attorney General Webb of California. Mr. Mathewson was employed by the supervisors last summer, the board expecting to raise money for the hospital by taxation. When the tax rate was fixed by the supervisors it was found impossible to increase the rate sufficiently to provide for the building. Mr. Mathewson presented to the supervisors a bill for services amounting to $3000. The bill was held up on the contention of the district attorney that the architect's fee was conditioned on the cost of the building and that since the actual cost of construction had not been ascertained the claim could not be paid. Mr. Mathewson then filed an amended claim which was referred to the attorney general who held that it must be paid by the supervisors.

### Architects for Vallejo Schools

Messrs. Woollett & Lamb, 210 Hagelstein building, Sacramento, have been commissioned to prepare plans for an elementary school building, Vallejo, to cost $130,000. Plans for the new Vallejo High School building will be prepared jointly by Mr. W. H. Weeks of San Francisco and Messrs. Perry & Clark of Vallejo. The building is to cost $250,000.

### $400,000 Spokane Hospital

The Scandia Hospital Association will erect a reinforced concrete and brick hospital building at Spokane, Wash., from plans by Messrs. Malmgren & Carpenter, Rookery building, Spokane. The building will have approximately 250 beds and will cost $400,000.

### Benicia Town Hall

Plans are being completed by Mr. Emile Lemme, 337 Seventh avenue, San Francisco, for a community hall at Benicia. Structure will be frame and will cost approximately $45,000. An election has been called at which time bonds will also be voted for playground apparatus, convenient station, two drinking fountains, street improvements and an auto fire truck.

### Oakland School Plans

Plans for alterations and additions to Oakland schools are being prepared under the direction of the supervising architect, Mr. C. W. Dickey, and it is hoped to let contracts on many of the buildings so that work can be started with the commencement of the summer vacation. While in the employ of the City of Oakland, the Board of Education has stipulated that Mr. Dickey shall devote his entire time to the city.

### To Erect Three-Story Building

Messrs. Chamberlain & Proctor, Mills building, San Francisco, have purchased the lot on the south side of Sutter street, between Powell and Mason streets, San Francisco, 45x137 ft. 6 in., and will erect a three-story store and loft building on the site at once. The adjoining property is about to be improved by the construction of a similar building for Mr. Morris Meyerfeld, Jr., president of the Orpheum Theatre Company.

### Sacramento Apartment House

Mr. Jens C. Petersen, architect in the Peoples Savings Bank building, Sacramento, is preparing working drawings for a four-story concrete and brick apartment house for Messrs. G. W. Miller and Howard Diehl. The building is to contain sixty apartments of from two to four rooms each and will cost $125,000.

### Concrete Factory

Mr. Henry C. Smith, Humboldt Bank building, San Francisco, is preparing plans for a part two and part three-story reinforced concrete factory 95x245 to be built on 12th street, between Shotwell and Folsom streets, San Francisco, for the National Radio Company.

### Concrete Bank Building

Mr. William Mooser, Nevada Bank building, San Francisco, has completed plans and awarded a contract for approximately $50,000 for a one-story reinforced concrete bank building at Courtland, near Sacramento.

### Bond Election for Auditorium

A bond issue of $850,000 will be submitted at the election May 4th in Kern county for a memorial auditorium in Bakersfield. Preliminary plans have been drawn by Mr. Chas. H. Biggar, architect of Bakersfield.

### Natatorium and Playground Equipment

A $3,981,000 bond election is to be held in Oakland in May, the money, if voted, to be used for eleven library extensions, new playground apparatus, a $175,000 natatorium or glassed-in swimming tank, and a community building and memorial hall.

### Will Design Sacramento High School

Mr. Edgar A. Mathews has been appointed architect of Sacramento's proposed new $600,000 high school building on his bid of 4½ per cent which includes plans, supervising and handling details according to the segregated contract plan. The Sacramento architects bid on the work at six per cent and were given an opportunity to underbid Mr. Mathews but declined. The selection of architects for other school buildings in Sacramento under the bond issue will be made shortly.

### Additions to Huntington Hotel

Mr. Myron Hunt, Hibernian building, Los Angeles, is preparing plans for a 60-room addition to the Huntington hotel at Pasadena, also for a 50-room servants' annex. Construction will be of hollow tile.

Mr. Hunt is also preparing plans for a new country club building, to be erected at Flintridge for Mr. Frank P. Flint, and is completing plans for four large bungalows at the Ambassador hotel on Wilshire boulevard, Los Angeles.

### Lodi School Building

Messrs. Wright & Saterlee, are preparing plans for a one-story hollow tile and stucco grammar school building at Lodi and for which there is an appropriation of $65,000. Mr. Saterlee has only recently formed a partnership with Mr. Wm. J. Wright. He will be remembered as formerly with Mr. Albert Farr, San Francisco architect, and later in the employ of the State Department of Engineering at Sacramento.

### Apartments and Residence

Mr. W. E. Milwain, Albany Block, Oakland, is preparing plans for a three-story frame, brick veneer and stucco apartment house to be built in the Seacliff District, San Francisco, for Mr. Willard C. Hunter. Mr. Milwain has also made plans for a $10,000 bungalow in Nova Drive, Piedmont for Mr. Rosseter Mickel.

### Oakland Apartment House

Messrs. C. W. McCall & W. J. Wythe, Oakland Bank of Savings building, Oakland, have completed plans and have taken figures for a three-story frame and plaster apartment house to be erected on Bellvue avenue, Oakland, at an estimated cost of $70,000. Mr. Wythe has also made plans for a new Methodist Church edifice at Escalon.

### Monterey Packing House

Plans are being prepared by Mr. A. W. Burgren, 661 Phelan building, San Francisco, for a two-story frame packing house to be erected at Monterey at an estimated cost of $40,000.

## Personal

Mr. Charles H. Cheney of San Francisco, now consulting engineer and planning expert for the City Plan Commission of Spokane, has begun his work. He is familiarizing himself with city maps, plans and other data at the office of the city engineer with a view to making recommendations for a zoning ordinance for all kinds of buildings.

Mr. T. Ronneberg, C. E., has returned to San Francisco from a business and pleasure trip which took him to New York and to his former home in Norway. Mr. Ronneberg found plenty of work awaiting his return, including the preparation of structural plans for a fifteen story office building at Bush and Montgomery streets for the Crocker Estate Company, Lewis P. Hobart, architect.

Mr. M. M. O'Shaughnessy, city engineer of San Francisco, was in Seattle and Tacoma recently. He was in Tacoma at the instance of the city council, which has before it the application of the privately-owned street railway system of that city for an increase in fares and it is his task to give as much information as possible on the subject.

Maj. John A. Griffin has been appointed city engineer of Los Angeles to fill the vacancy caused by the death of Mr. A. C. Hansen. Major Griffin has been a member of the engineering staff of the city at various periods for the last twelve years and had only recently returned as assistant engineer after three years' absence in the overseas service.

Mr. James Stephen, of Stephen, Stephen & Brust, New York Building, Seattle, has returned to the city from a six weeks tour along the Pacific coast. While away he visited San Francisco, Oakland, Long Beach, Los Angeles, San Diego and San Jose.

Mr. Frank D. Hudson is now representing the H. P. Moran Co., general building contractors of Akron, Ohio, who have established offices at 368 Pacific Electric building, Los Angeles. The firm will handle only large building construction.

Mr. Curtis Tobey of Phoenix, Ariz., was a visitor in Los Angeles the past month. Mr. Tobey and Mr. Arthur G. Lindley of Los Angeles, will be associated in architectural work on church buildings in Arizona.

Mr. E. J. Stanton, formerly with Mr. R. A. Herold, architect in Sacramento and more recently with D. H. Burnham & Co., Chicago, is now a member of Mr. Edwin Bergstrom's staff in Los Angeles.

Mr. Louis Svarz, Seattle, has been selected as supervising architect for the new $125,000 Everett armory building.

## Competition for Fair Ground Improvement

Architects and others are invited to submit plans and specifications for the general improvement and beautification, for County Fair and other purposes, of Agricultural Park, known also as the Race Track, at Stockton, California. Prizes of $300, $200 and $100 respectively, are offered for the 2nd, 3rd and 4th best plans submitted, the same to be judged by rules and to conform to certain requisites and requirements now on file with the Clerk of the Board of Supervisors. Plans are to be submitted sealed to the Clerk of the Board of Supervisors on or before May 4th, 1920, at 10:00 o'clock a. m. Further information may be obtained by addressing Mr. Eugene D. Graham, county clerk, Stockton.

## Model Country Farm Group

A complete group of country farm buildings to be laid out in an attractive manner by landscape engineers, is to be built on the Auburn Boulevard near Sacramento, from plans now being prepared by Mr. R. A. Herold, architect of Sacramento. The owner is Dr. J. B. Harris, a well-known Sacramento surgeon who has offices in the Capitol National Bank building. The group will include a large country house, garage, cow barns, tanks, reservoir, silos, dairy, pumping plant, etc.

## San Francisco School Work

Mr. John Reid, Jr., City Architect of San Francisco has completed plans for the new Grant School to be erected on Pacific avenue, between Baker and Broderick streets, San Francisco, and for which there is an appropriation of $180,000. Plans have also been completed for the new Harrison Street School to cost $100,000.

## Country House at San Jose

Mr. Clarence A. Tantau, 251 Kearny street, San Francisco, is preparing plans for a large two-story basement and attic residence for the William J. Leet Family on The Alameda, San Jose.

## For The Democratic Convention

Messrs. Ward & Blohme are to have charge of the seating arrangement, platform construction, etc., in the Municipal Auditorium, San Francisco, for the coming Democratic National Convention.

## South San Francisco Church

Mr. Carl Werner, Humboldt Bank building, San Francisco, is preparing plans for a brick church at South San Francisco for St. Paul's M. E. Society.

## Ross School Building

Mr. C. A. Meussdorffer, San Francisco architect, has made plans for a $25,000 frame schoolhouse for the Ross School District, Marin County.

### Meyer and Johnson Busy

The office of Mr. Frederick H. Meyer and Mr. Albin R. Johnson, architects, in the Bankers' Investment building, San Francisco, is busy on plans for several large projects, including a five story loft building to be built at First and Mission Streets for the Chas. C. Moore Company and to cost $300,000; the new White hospital in Sacramento to cost $400,000; the Healdsburg bank building to cost $100,000 and bank buildings at Chico and Red Bluff to cost $75,000 each.

### Architect Becomes General Manager

Mr. Howard Frost, president of the Los Angeles Pressed Brick Co., announces the appointment of Mr. Fred A. Harrison as general manager of the company. Prior to his connection with the Los Angeles Pressed Brick Co. Mr. Harrison was for ten years identified with a leading firm of architects and for five years was engaged in the contracting business.

### Designing $100,000 Theatre

Messrs. Reid Bros., California-Pacific building, San Francisco, are preparing plans for a $100,000 reinforced concrete moving picture theatre to be built at 8th avenue and Irving street, Richmond District, San Francisco for Mr. Patrick Biggins. The theatre will have a seating capacity close to 2000 persons.

### $75,000 Residence

Mr. Louis M. Upton, 454 Montgomery street, San Francisco, is completing plans for a $75,000 residence to be erected on the southeast corner of Vallejo and Baker streets, San Francisco, for Mr. E. L. Hueter. The house will have white cement exterior, tile roof, hardwood trim, marble terraces, ornamental iron balconies, etc.

### In His Own Building

Mr. H. H. Whiteley, architectural designer and builder, has moved his business and architectural offices to 520 S. Western Avenue, Los Angeles, where he has just completed a one story building especially designed to meet his requirements.

### Examination for Architects

The next regular examination for Architects will take place in the Capitol Building, Boise, Idaho, on September 14, 1920.

All inquiries should be addressed to the Department of Law Enforcement, Boise, Idaho.

### Two Arizona Theatres

Messrs. William Curlett & Son, Merchants National Bank building, Los Angeles, are preparing plans for a $200,000 concrete theatre at Phoenix, for Messrs. Rickards & Nace and a $100,000 theatre at Prescott, Arizona.

### San Francisco Architectural Club

It seems like pre-war times to go into the new quarters of the San Francisco Architectural Club, 77 O'Farrell Street, and find there many of the old members back again.

The war took away 75 per cent of the membership, but as the men returned and secured positions they have been rejoining the club for the social and educational opportunities offered.

At present the Atelier work of the Beaux Arts Society with Mr. Arthur Brown, Jr., as patron is being conducted.

A class in structural steel and reinforced concrete design is being taught on Tuesday and Thursday evenings by Mr. R. S. Chew, civil engineer.

THE COURSE COVERS:

Motion and Force.
Equilibrium or balance of forces.
External and internal forces.
Elastic properties of Material.
Bending moment and shears.
Force diagrams and equilibrium polygrams.
The application of these to beams, columns, plate girders, trusses and arches.
Design and principles of a six story class C. reinforced concrete building.

Architectural and Engineering draftsmen are welcome to take any of these courses by becoming a member of the Club.

An informal Valentine Dance was given on Saturday evening, February 14, as a housewarming in the new clubrooms, which were tastefully decorated for the occasion with hearts, lanterns and articles appropriate to St. Valentine. This, together with splendid jazz music, refreshments and an unusual sociable gathering, added to the enjoyment of a pleasant evening. Approximately 250 members and their friends were present.

By J. A. Magee.

### Mr. Lawrence Visits Washington State Chapter

Mr. Ellis F. Lawrence, Regional Director of the American Institute of Architects, was guest of the Washington State Chapter at its March meeting. Mr. Lawrence, who is a prominent architect of Portland and head of the Architectural Department of the University of Oregon, addressed the chapter upon matters pertaining to the coming convention of the institute, which will take place in Washington the end of this month and May 1.

### Two Contracts at Colusa

Mr. Edwin J. Symmes, architect in the Wells-Fargo building, San Francisco, recently signed two good contracts for improvements in Colusa. One is for a municipal swimming pool to cost $35,000, and the other is for an auto repair shop and apartment house for the Colusa Motor Sales Company to cost $34,000.

# With the Engineers

## Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

### Why a "Plumber" Should Not Be Called an "Engineer"

By E. E. BAILEY *

WITH interest I read the discussion with reference to the fitness of the term "Plumber" as applied to the act of installing sanitary systems, etc., noting the proposition to substitute the term "Engineer" for "Plumber." I offer for consideration the following suggestions:

The word "Engineer" according to my understanding, means one with technical knowledge, who has charge of and directs an undertaking by technical skill or astuteness. In general practice to lay out, to plan and specify, to direct in the execution, employing special training and skill.

The workman known as "Plumber," in general, has no such training nor qualifications, but is a tradesman, and in many cases can scarcely be called a competent mechanic, but at the best he is a tradesman, whether a master plumber, journeyman plumber, or an apprentice plumber.

I believe it is the desire of every technically trained man, qualified for the title in any branch, to keep inviolate the term "Engineer" that it may apply only to those who have technical knowledge and special training and who have prepared themselves for such a title.

I quite agree that the term "Plumber" is a senseless one, and as applied to this particular class of workmen has little meaning. In other words, it in nowise indicates the class of work referred to, and could well give place to a term which should in itself indicate the class of work in which the man referred to was engaged.

These men being engaged in the installation of various types of sanitary systems, would seem to me to be Sanitarians, as the one engaged in carpentry is a carpenter, in electric installations an electrician, in masonry a mason, in painting a painter, etc.; we would not think, however, of styling all of these as engineers, for they are not, they are simply tradesmen plying their trades. As a proper term by which to designate this class of workmen, I would suggest the name "Sanitary Fitter."

The term "Engineer" is much overworked. There are men with no training, no technical knowledge and in no sense qualified to bear the title "Engineer" who apply the name to themselves, and as a result we have heating engineers, landscape engineers, ventilating engineers, sanitary engineers, and land knows what not, among men who may be excellent mechanics or they may not be, but who are at the best just tradesmen and the title is entirely out of place as applied to them. If all these are entitled to the distinction "Engineer" there must be some other name whereby the men of technical knowledge, the astute men, the men who are qualified for the title "Engineer" may be known, and whereby we may differentiate between the real professional men and the tradesmen.

We, who are engaged in the construction world, fully realize that the various tradesmen are absolutely essential and cannot be dispensed with; there is a crying need in the building world for more and better mechanics, but they are not engineers and architects simply because they have adopted the title.

I am sure that architects and engineers generally would welcome a change in the above name to one which should properly indicate the class of work referred to. I am likewise sure that competent architects and engineers generally would frown upon the system that dubs every knight of the monkey wrench an engineer, for they are not. I am sure that all competent architects and engineers would welcome into the building world more real Sanitary Engineers and Heating Engineers.

* Of The Emmett E. Bailey Co., bank architects, Pittsburgh, in a communication to The Valve World.

### Tacoma Engineers Settle Paving Dispute

The Tacoma chapter of the American Association of Engineers has rendered the citizens a distinct favor by publishing a report discussing the various types of paving from a pure economic standpoint. They favor giving full power to a city engineer to select any kind of paving known, and the use of several kinds on the same street if traffic and physical conditions show the necessity.

The Tacoma lodge praises the report and calls it "Paving with Horse Sense," and adds that politics and paving can now be divorced because all advocates of particular brands of paving material can expect their pro rata share of the business.

## Draftsman's Unions—Roster of Locals*

* The Numeral is Designated by which Union is Located.

1. Portsmouth, Va., (Norfolk), Technical Engineers', Architects' and Draftsmen's Union. Federal service.
2. New York City, Marine Draftsmen's Union. Federal service.
3. Philadelphia, Pa., Marine Draftsmen's Union. Federal service. Marine.
4. Portsmouth, N. H., Draftsmen's Union. Federal service. Marine.
5. Newport, R. I., Draftsmen's Union. Federal service. Industrial.
6. Charleston, S. C., Technical Engineers', Architects' and Draftsmen's Union. Federal service.
7. Quincy, Mass., Marine Draftsmen's Union. Federal service. Marine.
8. Mare Island, Calif., Marine Draftsmen's Union. Federal service.
9. Washington, D. C., Washington Society of Draftsmen. Federal service.
10. New Orleans, La., Draftsmen's Union. Federal service. Marine and Industrial.
11. San Francisco, Calif., Engineers' and Draftsmen's Union. Marine and Industrial.
12. Bremerton, Wash., Draftsmen and Planners' Union. Federal service.
13. Boston, Mass., Draftsmen's Union. Federal service. Industrial.
14. Chicago, Ill., Local No. 14 of Int'l Fed. of Tech. Engrs., Arch. and Draftsmen. Industrial.
15. Boston, Mass., Navy Yard, Draftsmen's Union. Federal service.
16. Waynesboro, Pa., Draftsmen's Union. Industrial.
17. Seattle, Wash., Draftsmen's Union. Industrial and Marine.
18. Pittsfield, Mass., Technical Workers' Local No. 18. Industrial.
19. Newport News, Va., Technical Engineers', Architects' and Draftsmen's Union. Marine and Federal service.
20. Montreal, Canada, Darftsmen's Union. Industrial.
21. Bethlehem, Pa., Marine Draftsmen's Union. Marine.
22. Mobile, Ala., Marine Draftsmen's Union. Marine and Industrial.
23. Portland, Oreg., Oregon Tech. Engineers' and Architect's Association. Marine and Industrial.
24. Los Angeles, Calif., Draftsmen's Union. Marine and Industrial.
25. Jacksonville, Fla., Engineers', Architects and Draftsmen's Union. Marine and Industrial.
26. Balboa, Canal Zone, Isthmian Union of Technical Engineers, Architects and Draftsmen. Federal.
27. Yorktown, Va., York County Draftsmen's Union. Federal.
28. Portsmouth, Va., Tidewater Engineers and Draftsmen's Union. Industrial (Railroad.)
29. Pittsburgh, Pa., Iron City Technical and Draftsmen's Union. Industrial.
30. Milwaukee, Wis., Technical Engineers', Architects' and Draftsmen's Union. Marine and Industrial.
31. Meadville, Pa., Technical Engineers' and Draftsmen's Union. Industrial (Railroad.)
32. San Diego, Calif., Draftsmen's Union. Marine.
33. Cleveland, Ohio, Fed. Architects and Engineers of Building Construction. Industrial.
34. Newark, N. J., Tech. Men of Newark and County. Industrial.
35. St. Paul, Minn., St. Paul Technical Society. Industrial.
36. Pensacola, Fla., Technical Engineers' Union. Marine and Industrial.
37. New York City, Union of Technical Men. Industrial.
38. Elizabeth, N. J., Elizabeth Technical Union. Industrial.
39. Lynn, Mass., Technical Engineers', Architects and Draftsmen's Union. Industrial.

## Design and Construction of Bridges by Architects

The Council of the American Institute of Consulting Engineers, Inc., on February 5 adopted the following resolution:

Whereas: It is reported to the Council of the American Institute of Consulting Engineers that responsibility for the design and construction of certain important bridges has recently been intrusted to firms of architects; and

Whereas: In the construction of bridges of any type, and for any purpose the engineering problems are of vital and first importance in providing safety, adaptability and durability of the structures produced; and

Whereas: The external architectural treatment and decorative effect is secondary in importance to the engineering design; therefore, be it

Resolved, That the Council of the American Institute of Consulting Engineers condemns and protests against public bodies entrusting the responsibility for the design or production of such important engineering structures to professional men whose training and practice is in a wholly different field, and who must, therefore, delegate to subordinates the solution of the fundamental problems of primary and vital importance. The Council condemns a division of the responsibility which will inevitably result by departing from ordinary procedure, and urges that no further work of the kind be entrusted to any except specialized engineers of acknowledged standing. The Council recommends, however, that in the case of monumental structures, the decorative effect secured by architectural treatment shall be considered by specialists engaged for that specific purpose.

## Engineers For The Legislature

The Oregon Chapter, American Association of Engineers, at its meeting on March 12, favored the election of engineers to the state legislature and promised to support such members of the association as might file their names for nomination. Since so great a part of the public money is being spent for engineering works, it was considered reasonable that the profession have one of its members, at least, on the floor of the House to explain and advocate engineering measures.

## Yakima Architects Form Association

At a meeting held in Yakima, Washington, March 6th, which was attended by all registered architects of Yakima Valley, the Yakima Association of Architects was formed, and Mr. T. R. Jacobs was elected president. Membership consists of Messrs. W. W. DeVeaux, Alick Lundstrum, Harry Weatherwax, W. L. Lanning, Lin Bissell, William Perin and T. Y. West. The newly formed society wishes to affiliate itself with the Washington State Chapter, American Institute of Architects.

## American Association of Engineers Reduces Entrance Fee

All members of National engineering societies now join the American Association of Engineers at a reduced fee. The fee for such applicants will be five dollars instead of ten dollars. The membership now numbers thirteen thousand in the United States. San Francisco chapter has over four hundred members.

# The Contractor

BUILDING CONSTRUCTION, BRIDGES AND ROAD WORK

### Convention of Contractors.

First annual convention of Associated General Contractors of the Pacific Northwest was held in the Peacock room of the Multnomah hotel, Portland, March second, third and fourth. If the proceedings of this first convention can be taken as an indication of how well this organization is going to function in the future, it is destined to have a profound effect for good upon the entire Northwest.

The Third Annual Convention of Northwest Master Builders' Association was also held in Portland, Oregon, and this meeting fully demonstrated that the organization wears well; stands the test of time and lives up to its reputation as a stable, equalizing force upon which the public can depend at all times.

The gavel used by the toastmaster, Mr. O. G. Hughson, secretary-treasurer of the Portland General Building Contractors' Association and manager of the Builders' Exchange, was made and presented to him by Mr. George Hines, curator of the Oregon Historical Society from 18 different pieces of wood of historic interest from various parts of the old Oregon territory, a description of each being read by Mr. Hines.

Mr. Christian Olsen of Bremerton, Washington, to whom was assigned the subject "Licensing of Contractors," reported that he had searched the libraries and public records of many states to get some light upon the matter but failed to find a state with the exception of Maryland, that had passed such legislation, but which he did not consider of great value as it was not broad enough. The matter of preparing a proper bill for presentation to the legislature was referred to the executive committee.

Mr. Ellis F. Lawrence, Dean of the School of Architecture of the University of Oregon, addressed the convention on the subject, "The Architect and the Building Contractor—Past and Present." It is at such meetings as these—, the speaker declared—, that it is desirable to try and get down to basic facts and find out the trouble in the business, stating that the back of the architect had been against the wall and he has been fighting several years for existence just as the contractor is fighting for what little he gets; that the building industry is second to none but that it is sliding a little nearer the precipice all the time in its chaotic demoralization and disorganization; its petty rivalries; its failure to control its own skill, science and knowledge.

"The Contractor's Profits—If Any," was the subject assigned to Mr. M. W. Lorenz, builder of Portland, and Captain Frederick S. Cook, of Portland, spoke upon "The Relation Between the General Building Contractor and the Specialty Contractor."

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### Reinforced Concrete Warehouse

The California Almond Growers' Exchange will build a four-story reinforced concrete warehouse at Sacramento at a cost of $100,000, from plans by George C. Sellon & Company, architects of Sacramento.

The same firm of architects has completed plans for a $50,000 school building at Roseville and a $45,000 school at Lincoln.

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### Publicity for the Contractor

A new idea in publicity for construction work has been instituted in the building of an extension for Selfridge's, the large American department store in London. A gangway is laid across one end of the excavation and the public is invited to pass over and view the foundation work. To assist the non-technical man in comprehending what he sees, all the machinery is labelled conspicuously: "concrete mixer," "crane," etc. This is in decided contrast to the more usual practice of putting up a tight fence and leaving a more or less curious public to peep through occasional and unsatisfactory knot holes. The publicity idea has elements of value to the contractor and—in this case—to the owner also, who instituted it to advertise his store and its activities.—Contract Record.

# The Largest Armco Iron Flume Ever Installed

By L. E. THOMPSON

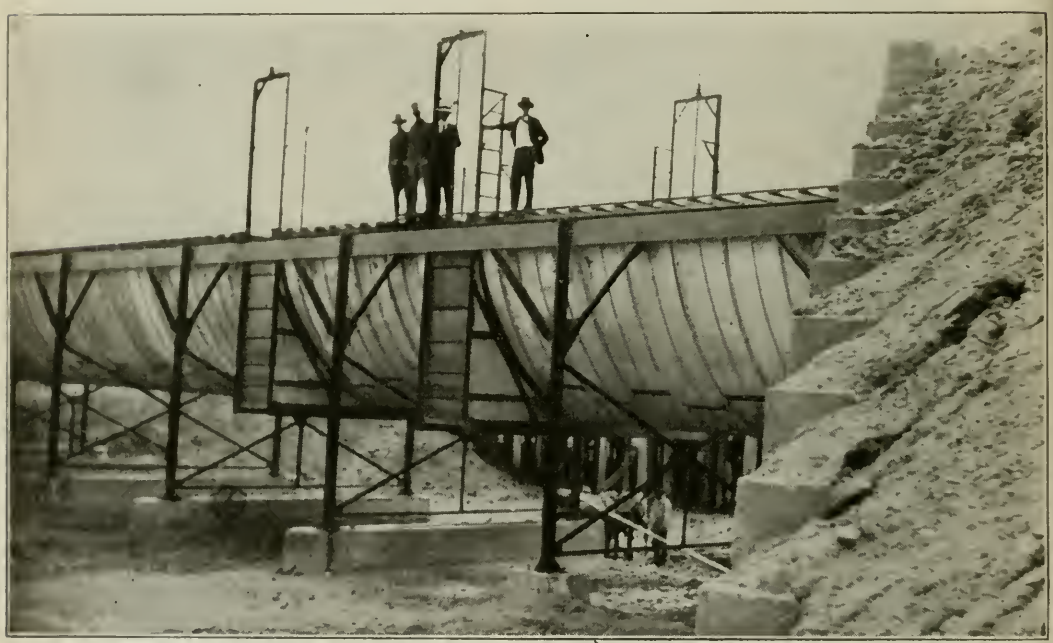
THE Twin Lakes Reservoir & Canal Company of Ordway, Colorado, in the month of September, 1919, completed the installation of the largest Armco Iron flume ever used. This flume is eighteen feet in diameter, nine feet deep, one hundred sixty feet long, and has a capacity of one thousand cubic feet of water per second. The material is twelve gauge Armco (American Ingot) Iron.

This flume has been in use ever since completion and operates under extremely severe conditions. It is installed on an intake canal to a large reservoir close to Ordway, Colorado. Fifty-six thousand acres of land are irrigated under this system. The large reservoir is filled in the winter by the intake canal, which is subject to ice conditions. The flume has operated perfectly and no reconstruction work has been necessary since the installation was completed.

The flume was installed under the supervision of Mr. George E. Beaver, engineer and general manager of The Twin Lakes Reservoir & Canal Company.

Recently Mr. Beaver stated that the flume had been carrying a large quantity of ice during this season and there is no question but that the construction is going to withstand all the severe conditions encountered in the operation for many years to come.

Last summer a flood came down the arroyo, the water extending over the concrete piers, even up to the bottom of the flume conduit. The structure withstood the flood without any damage whatsoever.



A view of the largest flume of Armco Iron ever constructed. It is 18 feet in diameter, 9 feet deep, 160 feet long and has a capacity of 1,000 cubic feet of water per second.

This Company has several concrete siphons crossing arroyos of similar nature. They state that the flume is far superior to the siphons for this purpose.

The accompanying illustrations show two views of the completed flume structure. On account of the arroyo being an especially good place to divert water in case of damage to the ditch below, there were sluice gates built into the flume for this purpose.

There is also shown a view of the old wooden flume structure which was replaced by the Armco Iron flume.

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The STANLEY WORKS
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GARAGE HARDWARE

Good hinges and latches are as essential to a new garage as locks are on front doors. Service, strength and handiness are the reasons why Stanley Garage Hardware will be asked for by enthusiastic car owners about to have you design a garage for them.

This new catalog shows a variety of hardware sets for one or more car garages. Everything that would interest your client is carefully explained and illustrated.

If you have not already received your copy ask for B50 and the catalog will be gladly sent.

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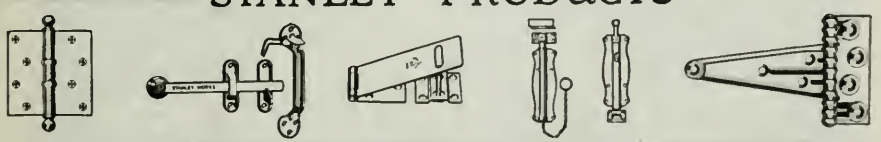
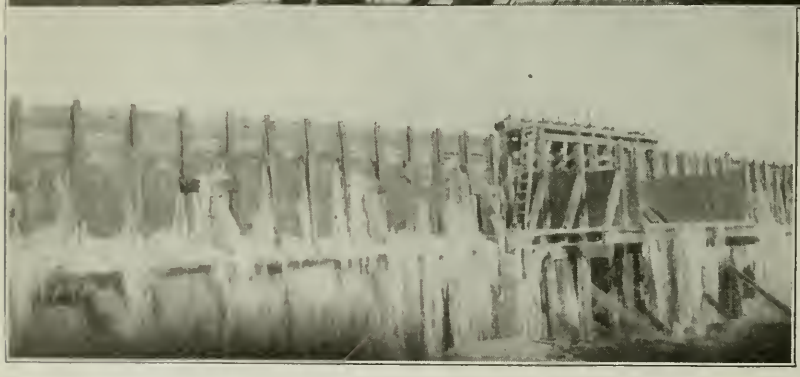


*The Stanley Works-New Britain, Conn., New York, Chicago.*



Above is shown another view of the huge Armco Iron Flume. At left is the leaky wooden conduit which the Armco Iron Flume replaced.


HARDWOOD HEADQUARTERS

ASH-BASSWOOD-BIRCH
AROMATIC RED CEDAR
COTTONWOOD-ELM-HOLLY
SOUTHERN RED GUM
HICKORY-LAUREL-MAPLE
OREGON MAPLE-PLAIN OAK
- QUARTERED OAK -
WYBROCK BENDING OAK
POPLAR--WALNUT

BOXWOOD-EBONY-IRONBARK
JENISERO-KOA-SPANISH CEDAR
LIGNUMVITAE-MAHOGANY
ROSEWOOD-TEAK-RED BEAN
SPOTTED GUM-ORCASSIAN WALNUT

LUMBER--TIMBER
HARDWOOD FLOORING
WYBRO VENEERED PANELS
DOWELS-TREENAILS-VENEERS

WHITE BROTHERS
FIFTH and BRANNAN STREETS SAN FRANCISCO, CAL.

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are to be found in the best homes of California.

HAINES, JONES & CADBURY COMPANY
Makers of Plumbing Supplies
857 Folsom St., San Francisco
NEW YORK RICHMOND, VA. SAVANNAH PHILADELPHIA

# American Mailing Device Corporation Continues to Expand

Manufactured by the American Mailing Device Corporation, 103 Park avenue, New York City, N. Y., for the San Francisco City Hall.

THE American Mailing Device Corporation, 103 Park avenue, New York City, N. Y., manufacturers of United States Mail chutes for public buildings, office buildings, clubs, etc., made and installed the exquisite mail boxes, mail chutes, and package boxes in the San Francisco City Hall building. This installation, in points of design and workmanship, has been pronounced one of the most beautiful pieces of ornamental bronze work in mail chutes in the United States.

The American Mailing Device Corporation has been manufacturing and installing United States mail chutes, mail boxes, package boxes, United States Parcel Post chutes and mail delivery boxes since 1913, and at the present time is said to be the largest manufacturer of this equipment in America.

During the war this company, on accout of the cessation of building operations, made comparatively few large installations, although its business was carried on as usual, but the demand for such work was very slight compared to previous years.

This company, during the year 1918 and the early part of 1919, had some five million dollars worth of contracts for the construction of war munitions for the Ordnance Department, United States Army. A large factory was erected in Long Island city, New York, installing some $200,000 worth of special equipment for the construction of steel magazines, tubes, and other parts to be used in small arms for the Ordnance Department.

During this period the Company endeavored to carry on as much of its private work as possible, but due to the issuance of priority orders by all of the departments of the Government, in many cases it was unable to obtain such materials as were needed in its private work, but in nearly all cases where it had contracts for private work, these contracts were carried out and successfully completed.

The American Mailing Device Corporation in the early history of its organization had considerable litigation with another mail chute concern by which it was sued for infringement of patents. This suit was carried through the United States Circuit Court of Appeals, which gave a judgment in favor of the American Mailing Device Corporation and the company at the present time is involved in no patent litigation of any kind covering any of its products.

The company is represented on the Pacific Coast by the Waterhouse-Wilcox

D. ZELINSKY & SONS
PAINTERS AND DECORATORS
420 TURK STREET, SAN FRANCISCO

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ATLAS-WHITE

is the ideal cement for making mortar to be used in Pointing, Setting and Backing. Its non-staining quality is one of the reasons why Atlas-White is found so often — On the Job.

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*Upon request we will promptly send to architects one or all of three books: "Color Tones in Stucco," "Non-Staining Mortar for Pointing, Setting and Backing," "Cast Stone."*

ATLAS WHITE

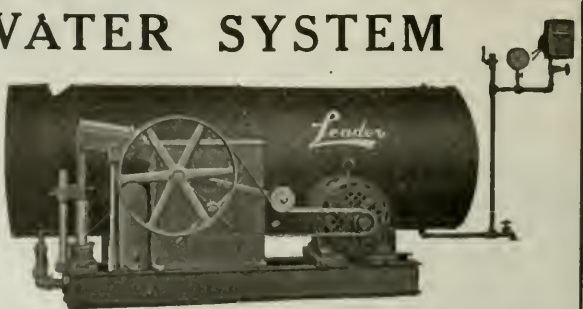
CORRIDOR, SAN FRANCISCO CITY HALL, SHOWING MAIL BOX IN FOREGROUND

Company, 523 Market street, San Francisco, with offices in Los Angeles and Portland, who have the states of California, Oregon, Nevada and Arizona. It is also represented in the State of Washington by the F. T. Crowe Company, 1103 First avenue, Seattle.

The American Mailing Device Corporation now manufactures in its own factory all of its own products, carrying a large stock of materials for the construction of mail chutes and mail boxes. The company also sells and installs mail chutes in other countries, a number of installations having been made in Cuba, Hawaii and the Philippine Islands.

LEADER WATER SYSTEM

No country home is complete without this modern water system. Running water under pressure whenever and wherever needed. Convenient, economical, sanitary.



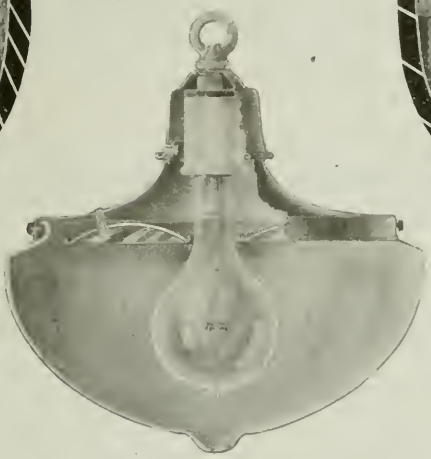

Pacific Pump & Supply Company, Distributors

851-853 Folsom Street
SAN FRANCISCO, CALIF.

# Radiantlite is the reason for these Modern Buildings junking their Entire Lighting Installation

## INVESTIGATE:—

Know *why* Radiantlite has replaced the lighting systems of establishments considered absolutely modern and up-to-date in this respect—*until* Radiantlite was demonstrated.



A few years ago the

*Corbett Building, Portland, Oregon,*

was considered adequately lighted. Its entire lighting system has now given way to Radiantlite. Note the overstepping shade of Radiantlite that absolutely eliminates grotesque ceiling shadows. Radiantlite glass shade—minimum absorption—maximum diffusion.

*Northwestern Bank Building*

One of the newest buildings of Portland that junked its entire former lighting equipment and installed Radiantlite

The seamless *silver-plated* reflector is curved to catch all up-directed rays and add their power to the down-directed light rays. Auto headlight principle.

Radiantlite is perfectly protected from dust that decreases light efficiency—yet it is thoroughly ventilated—a cool light. This ventilation lengthens the life of the lamp and prevents blackening.

There's a Radiantlite in a size and a design suitable for every business and home requirement.

**FREE TRIAL**

**To Architects and Dealers**

We will send you, without cost, one Radiantlite and allow you to use it in your office or salesroom for two weeks. The purpose of this demonstration is to give you first-hand knowledge of Radiantlite, so that you may recommend it honestly and enthusiastically to your customers and clients.

MANUFACTURERS

**J. C. ENGLISH CO.**
148 Fifth Street
PORTLAND, ORE.

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1517 Second Street
SEATTLE, WASH.

### Landscape Architects

Mr. Wilbur David Cook, associate editor of The Architect and Engineer and well known on the Pacific Coast as a landscape architect of eminence, has formed a partnership for the practice of his profession with Mr. George D. Hall, with offices at 529 I. W. Hellman building, Los Angeles. The firm offers its services to clients who desire experienced designers and advisors, practicing on professional lines as prescribed by the American Society of Landscape Architects, Mr. Cook being at present the president of the Pacific Coast chapter of this society.

Mr. Cook was for many years with the Olmsted firm at Brookline, Mass. Since 1905 he has been in private practice on the Coast, acting as consulting and designing landscape architect for several Western cities, and some of the most important projects in the West.

He has planned many of the finest private estates and subdivisions on the Coast. For two years, he was employed by the Construction Division, War Department, as expert planner in connection with camp development work.

Mr. George D. Hall, Harvard Graduate, Class '99, for seventeen years member of Brett & Hall, Boston, designers of the cities of Prince Rupert and Prince George, in British Columbia, and many extensive private estates and residential subdivision, both in the United States and Canada, has only recently come to Los Angeles to form a partnership with Mr. Cook. He was also employed by the Construction Division as expert planner, and the United States Housing Corporation, in connection with war projects.

### Who Was the Architect?

A State bank in Texas, says an Exchange, has issued a circular asking for a subscription to an issue of $675,000 of first mortgage bonds, bearing interest at 6 per cent, the proceeds from the bonds to be mainly used in the construction of a large banking building.

The proposed building is minutely described as to the number of stories, the high class of its equipment, its desirable location and many other details. The name of the architect is not stated.

The bank officials under whose direction this circular was undoubtedly prepared have apparently lost sight of the fact that by naming their architect they would, if their selection had been a wise one, have greatly aided the impression of confidence in the value of the bonds they are trying to market.

The value, as a commercial asset, of architectural design is today increasingly realized. No owner of good judgment will ignore this, for he knows there is a pride of tenantry as well as ownership. Many owners who appreciate this will couple with a reference to their building the fact of its architectural excellence and the name of its architect, with exactly the same feeling of pride of possession as will the picture collector who dwells on the names of the artists.

We feel that the Texas bank could very materially have strengthened its appeal to the bond-buying public if they had incorporated in their circular a picture of the proposed building carrying the name of the architect who was to be entrusted with the expenditure of so large a sum of money.

### Newbery Electric Co. Expands.

The Electrical Construction Company, Oakland, J. Gensler, Manager, announces the disposal of its plant and business to the F. E. Newbery Electric Co., which has opened offices at 417-419 Webster Street, Oakland, V. A. Farren, manager, and asks for a continuance of the goodwill and support accorded the Electrical Construction Co. by the architects and builders of Oakland and the Bay District.

The Company will conduct an electrical contracting, and motor repair and rental business, and will make every endeavor to render prompt and satisfactory service at all times.

Kewanee Water System

Maintain your own Plant.
Small Operating Expense.
A Perfect Water Supply to Country Homes, Hotels and Parks.

Simonds Machinery Co.
117-121 Montgomery Street
SAN FRANCISCO
Phone Kearny 1457

House in Southern California, Frank Meline, Architect

# The Charm of Color Tones

**and the harmonious beauty of**

## CLAY TILE ROOFING

makes for that super-elegance in which the exterior adornment of the home finds its highest expression. An element of charm is added by the broad variation of color tones in wondrous harmonizing effects and soft texture.

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## Los Angeles Pressed Brick Co.

ENTIRE SIXTH FLOOR, FROST BUILDING
SECOND and BROADWAY, LOS ANGELES

**Northern California Distributors**

## UNITED MATERIALS COMPANY

CROSSLEY BUILDING, SAN FRANCISCO

# THE HOUSE BEAUTIFUL

THE INTERIOR OF A HOME SHOULD HAVE THOSE LITTLE TOUCHES OF REFINEMENT THAT COME WITH THE CO-OPERATION OF AN EXPERIENCED INTERIOR DECORATOR

## CONSULT US

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DECORATIVE IDEAS, ARTISTIC FRAMING, BYBAMOPA WARE, LAMP SHADES, MIRRORS, CANDLE-STICKS, BOOK-ENDS, STORE WINDOW FIXTURES, ODD FURNITURE, PIECES IN UNIQUE COLORINGS AND INDEFINITE CARVINGS

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BROADWAY BANK BUILDING, 22d and Broadway, Oakland, Calif.
Clay N. Burrell, Architect — Sommarstrom & Hinckel, Owners and Builders

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# SPOTT ELECTRICAL CO.

*Yours for Service*

## Electrical Construction, Motors Lighting Fixtures

16th and Clay Streets, OAKLAND, CALIFORNIA Phone, Oakland 540

### Historic Offices Vacated

Some interesting local history is recalled by the removal of Mr. Arthur Benton, Los Angeles architect, from the old Mott building at 114 North Spring Street to a new location on Sunset Boulevard in the Southern city.

The building just vacated has housed architects' offices continuously for about forty years. Its second story was in living apartments at an earlier date. In 1893 Mr. Benton succeded Messrs. Caukin, Boring & Haas, whose offices were, in their spaciousness, the envy of other architects.

The Architects' Society, now the Los Angeles Chapter, A. I. A., effected its permanent organization in Mr. Benton's offices early in 1893, he being elected its first permanent secretary, and its meetings for several years continued to be held there. Some years later the constitution of the Engineers and Architects' Association of Southern California was formulated there, and later these rooms were the headquarters of the society.

At various times during Mr. Benton's occupancy they have housed the official records of the California Society, Sons of the Revolution, the Society of Colonial Wars, and the Southern California Academy of Sciences.

### Office Building Plans Approved

Final approval has been given the plans of Mr. Lewis P. Hobart, Crocker building, San Francisco, by the Crocker Estate Company, for a fifteen-story Class "A" office building to be erected at Montgomery and Bush streets. Mr. Hobart is also at work on plans for the new aquarium in Golden Gate Park, for which there is available a legacy of $250,000, and a building for the Seamen's Institute, to cost $500,000

### Duplex Apartments

Mr. C. O. Clausen, has completed plans and a contract has been let for six, two-story and basement frame and plaster apartment buildings, to cover ground area 240x100 on Geary street, between 16th and 17th avenues, San Francisco, for Mr. Haase. The contract price is $104,000.

### San Jose Apartments

Messrs. Wolfe & Higgins of San Jose, have completed plans for a $15,000 apartment house to be built at 169 Park avenue, San Jose, for Mrs. M. Mello.

### Announcement

The Portland Cement Association announces the opening of a new association office in Portland, Oregon, at 146 Fifth street, with Mr. Hans Mumm, Jr., as district engineer in charge, effective March 1, 1920.

Since 1903 Mr. Mumm has been engaged in various engineering work in Washington, having been county engineer of Snohomish county from 1912 to 1915, and the year following, city engineer of Everett, Wash. Mr. Mumm joined the staff of the Portland Cement Association in 1916, since which time he has been identified with Association work in Washington.

### Fullerwear—a Varnish

Announcement is made by W. P. Fuller & Co. of a new varnish product, Fullerwear, which it is now selling as a general purpose spar varnish for exterior and interior work. This varnish was formulated during the war to meet the requirements of the government for a long-oil, fossil gum varnish which would combine all the essentials of a durable exterior spar varnish and at the same time dry rapidly and be tough and hard.

Fullerwear is pale in color, has a good body, flows easily, dries dust free in about four hours, and is hard and tough enough to be walked on in about twelve hours. It may be rubbed and polishes with a high luster.

### Large Floor Display in San Francisco

The Smith-Booth-Usher Co., Mr. H. A. Olds, manager, announces the removal of its San Francisco establishment from temporary quarters at 40-42 Fremont street to permanent quarters at 50-60 Fremont street. The company in its new quarters has one of the largest floor displays of machinery and construction equipment in San Francisco.

### Chevrolet Company to Erect Sales Building in Oakland

The Chevrolet Motor Company will erect a six or seven-story reinforced concrete auto sales building at Twenty-first and Franklin streets, Oakland, at a cost of $200,000 or more. The plans have been drawn by Mr. Maury Diggs, architect.

CHARLES T. PHILLIPS
CONSULTING ENGINEER
PACIFIC BUILDING SAN FRANCISCO
HEATING VENTILATION WIRING ILLUMINATION

# Present Cost of Building Materials*

## With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, April 20, 1920.
All prices f. o. b. cars San Francisco or Oakland.

### American Institute of Architects' Fees

New work—6 per cent minimum basis. Alterations—7 to 10 per cent as a minimum basis. High class residence work—10 per cent as a minimum.

**Bond**—1½% amount of contract.

**Brickwork**—
Common, $36.00 per 1000 laid.
Face, $70.00 per 1000 laid.
Common, f. o. b. cars, $16.00 plus cartage.
Face, f. o. b. cars, $45.50 per 1000, carload lots.
12x12x3 in., 10¼c. per square foot.
12x12x4 in., 11¾c. per square foot.
12x12x6 in., 16¼c. per square foot.
Hod carriers, $7.50 per day.
Bricklayers, $10.00 per day.
Lime—$2.40 per bbl.; per ton of 2000 lbs., $18.50.

**Composition Floors**—30c. per sq. ft.
Klingstone, 27c. to 65c. per foot.

**Concrete Work** (material at San Francisco bunkers)—

| | |
|---|---|
| No. 3 rock | $2.25 per yd. |
| No. 4 rock | 2.40 per yd. |
| Niles pea gravel | 2.50 per yd. |
| Niles gravel | 2.25 per yd. |
| Niles top gravel | 2.50 per yd. |
| City gravel | 2.25 per yd. |
| River sand | 1.40 per yd. |
| Bank sand | 75c. per yd. |

**Monterey Sand**—
No. 1 grade, $1.20 per ton, car load lots, f. o. b. Monterey.
No. 2 grade, $1.00 per ton, car load lots, f. o. b. Monterey.
San-shell-beach, $2.50 per ton.
Cement (F. O. B. cars)...$3.63 per bbl.
Rebate for sacks, 25c. each.
Atlas "White" ..... $9.50 per bbl.
Medusa cement ..... 9.50 per bbl.
Forms ..... $60.00 per M
Wage—

| | |
|---|---|
| Laborers | $6.00 per day |
| Concrete workers | 7.50 per day |
| Cement finishers | 9.00 per day |

**Dampproofing**—
Two-coat work, 30c. per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $6.00 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $9.00 per day.

**Electric Wiring**—$8.00 to $15.00 per outlet.
WAGE—Electricians, $9.00 per day.

**Elevators**—
Prices vary according to capacity, speed and type. Consult elevator companies.

**Excavation**—
$2.00 per yard.
Teams, $12.00 per day.
Trucks, $30.00 to $40.00 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Cost of ornamental iron, cast iron, etc., depends on design.

**Flooring**—
Klingstone sanitary fireproof flooring, $55 per ton on job.

**Fire Escapes**—
Ten-foot balcony, with stairs, $100.00 per balcony.

**Glass**—
(Consult with manufacturers.)
21 ounce, 25c. per square foot.
Plate, $1.00 to $3.00 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 40c. per square foot.
Note.—Add extra for setting.
WAGE—Glaziers, $9.00 per day.

**Heating**—
Average, $3.25 per sq. ft, of radiation.
WAGE—Steamfitters, $10.00 per day.

**Lumber**—
Common (at building), $51.00 per 1000 (average).
Common O. P. (select), $100.00 per 1000 (average).
Flooring—

| | |
|---|---|
| 1x3 No. 1 | $125.00 per 1000 |
| 1x3 No. 2 | 117.00 per 1000 |
| 1x4 No. 1 | 120.00 per 1000 |
| 1x4 No. 2 | 117.00 per 1000 |
| 1x4 No. 3 | 110.00 per 1000 |
| 1x6 No. 1 | 125.00 per 1000 |
| 1x6 No. 2 | 122.00 per 1000 |
| 1¼x4 and 6 No. 1 | 125.00 per 1000 |
| 1¼x4 and 6 No. 2 | 120.00 per 1000 |
| Slash grain, 1x4 No. 1 | 94.00 per 1000 |
| Slash grain, 1x4 No. 3 | 89.00 per 1000 |
| No. 1 common run to T. & G. | 72.00 per 1000 |
| Lath | $17.00 per 1000 |

Shingles—

| | |
|---|---|
| Redwood, No. 1 | $1.60 per bdle. |
| No. 2 | 1.50 per bdle. |
| Red cedar | 1.85 per bdle. |

(Add cartage to above)

Hardwood Floors—
Maple floor (laid and finished), 38c. per foot.
Factory grade floors (laid and finished), 30c. per foot.
Oak (quartered, finished), 57c per foot.
Oak (clear), 41c. per foot.
Oak (select), 39c. per foot.
Oak, quartered, sawed, clear, select, 48c.
WAGE—Floor layers, $9.00 per day.
In flooring the usual grades of oak used are

| | Grades | Quartered Sawed | Plain Sawed |
|---|---|---|---|
| 5/16" | Clear | " | " |
| | Select | " | " |
| 1"x3"-13/16"x2¼" | Clear | " | " |
| | Select | " | " |
| | No. 1 (very little used) | | |

⅞-inch plain oak ..... 58c.
⅞-inch quarter sawed ..... 70c.

* NOTE.—For country work add freight and cartage to prices given.

**Hardwood Floors (not laid)—**

| | | Per M ft. |
|---|---|---|
| 13/16x2¼" face | Clear quartered oak | $470.00 |
| | Select quartered oak | 360.00 |
| | Clear plain oak | 350.00 |
| | Select plain oak | 315.00 |
| | Clear maple | 225.00 |
| | Clear maple—white | 255.00 |
| 13/16x3¼" face | Clear maple | 230.00 |
| 1⅛x2¼" face | Clear maple | 235.00 |
| ⅜x2" face | Clear quartered oak | 310.00 |
| | Select quartered oak | 260.00 |
| | Clear plain oak | 260.00 |
| | Select plain oak | 225.00 |
| | Clear maple | 180.00 |
| | Clear beech | 175.00 |
| | Clear red beech | 215.00 |

**Veneered Panels—**

| 24x60 in., ¼ in., 3-ply, 1 side: | Per ft. |
|---|---|
| Ash | 26c. |
| Hungarian Ash | 39c. |
| Birch | 26c. |
| Curly Birch | 39c. |
| Elm | 24c. |
| Jenisero (Genezero) | 37c. |
| Southern Red Gum (plain fig.) | 32c. |
| Qld. Southern Red Gum | 39c. |
| Hawaiian Koa | 39c. |
| Maple | 24c. |
| Birdseye Maple | 47½c. |
| Mahogany | 39c. |
| Oregon Pine | 19½c. |
| Plain Oak | 31c. |
| Quartered Oak | 39c. |
| Walnut | 39c. |

**Millwork—**

O. P., $180 per 1000. R. W., $180 per 1000.
Double hung box frame windows (average) with trim ..... $10.50 each
Doors, includ. trim (single panel) ..... 15.00 each
Doors, including trim (five panel) ..... $12.00 each
Screen doors ..... 5.50 each
Window screens ..... 3.50 each
Medicine cases ..... 5.00 each
Cases for kitchen pantries seven feet high, per lineal foot ..... 10.00 each
Dining room cases same price, if not too elaborate,
Flag poles, per foot ..... 1.50

**Labor—**

Rough carpentry, warehouse heavy framing, $15.00 per 1000.
For smaller work, average, $23.00, $30.00 per 1000.
WAGE—Laborers, $6.00 per day.
Carpenters, $8.50 per day.

**Marble—**

| | |
|---|---|
| Columbia | $1.50 sq. ft. |
| Alaska | 1.50 sq. ft. |
| Tennessee | 1.75 sq. ft. |
| Verde Antique | 3.00 sq. ft. |

**Painting—**

Two-coat work, 35c. per yard.
Three-coat work, 45c. per yard.
Whitewashing, 5c. per yard.
Cold water paint, 10c. per yard.
Klingstone finish, 18c. per lb., barrel lots.
WAGE—Painters, $8.50 per day.

**Patent Chimneys—**

| | |
|---|---|
| 6-inch | $1.50 lineal foot |
| 8-inch | 1.75 lineal foot |
| 10-inch | 2.25 lineal foot |
| 12-inch | 3.00 lineal foot |

**Pipe Casings**—$8.00 each.

**Plastering—**

Interior, on wood lath, 70c. per yard.
Interior, on metal lath, $1.25 per yard.
Exterior, on brick or concrete, $1.00 per yard.
Portland White, $1.25 to $1.50.
Interior on brick or terra cotta, 60c to 65c per yard.
Exterior, on metal lath, $2.25 to $2.50 per yard.
Wood lath, $12.00 at yard per 1000.
Metal studding, $1.00 to $1.25 per yard.
Metal studding, with lath and plaster, $1.90 per yard.
Klingstone stucco, $37.50 per ton, on job.
Galv. (metal lath), 38c. and up per yard, according to gauge.
Lime, f. o. b. warehouse, $2.40 per bbl.
Hardwall plaster, $20.00 per ton f. o. b. warehouse.
Klingstone stucco, on galvanized metal, $1.60 to $2.25 per yard.
WAGE—Hod carriers, $8.50 per day.
Plasterers, $10.00 per day.

**Plumbing—**

From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $10.00 per day.

**Reinforcing Steel—**

Base price for less than car load lots, $5.50 per 100 lbs.
Car load lots, $5.25 per 100 lbs., f. o. b. San Francisco. (Mill delivery.)

**Roofing—**

Five-ply tar and gravel, $7.50 per square for 30 squares or over.
Less than 30 squares, $8.00 per square.
Tile, $35.00 per square.
Redwood shingle, $13.00 per sq. in place.
Cedar shingle, $13.00 per square in place.
Reinforced Pabco roofing, $8.25 per square.
WAGE—Roofers, $8.00 to $9.00 per day.

**Rough Hardware—**

Nails, per keg, $6.75 base and very scarce.
Deafening felt, $110.00 per ton.
Building paper, P. & B.,
1 ply, $3.85 per 1000 ft. roll.
2 ply., $5.75 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.50 per hank 100 feet.
Common, $1.75 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

**Skylights—**

Copper, $1.25 a square foot (not glazed).
Galvanized iron, 50c. a square foot (not glazed).
WAGE—Sheet metal workers, $9.00 per day.

**Store Fronts—**

Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.35 per lin. foot.

**Structural Steel**—$150.00 per ton.
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.

**Tile—**

White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $2.00 per sq. foot, laid.

**Windows—**

Metal, $2.00 a square foot.

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"When my husband told me that there were stoves made with Armco Iron polished sheets and enameled parts, I decided to get one. I wrote the manufacturers of Armco Iron—The American Rolling Mill Company, of Middletown, Ohio—and they sent me the names and addresses of the firms that make such stoves, also of the manufacturers of Armco Iron Enameled Kitchen Cabinets, Refrigerators, and Table-Tops.

"As you see, I now use all of these articles, and your own eyes tell you how smoothly beautiful and perfect they are. Because of the exceptional purity and evenness of Armco Iron, these kitchen products are remarkably free from occluded gases, seams, scars, cracks, spots, pinholes, and other defects, which in less carefully made enameled products show through the enameling and cause ugly spots and rough places.

"After my two years' experience with these products in my kitchen, I can heartily recommend them to every housewife."

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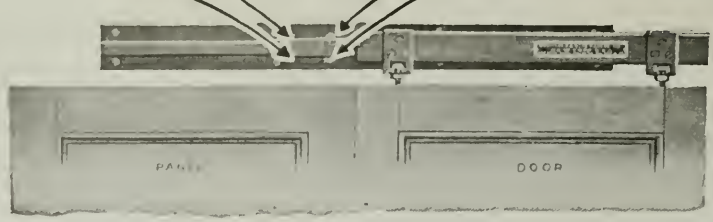


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Columbia Wire & Iron Works..... Portland, Ore.
D. E. Fryer & Co.....Seattle, Spokane, Tacoma, Wash.; Great Falls, Mont.

## Announcements of Portland Cement Association

Mr. C. N. Reitze, formerly district engineer of the Seattle office of the Portland Cement Association, has been appointed district manager of the Pacific Coast offices of the association at Seattle, Portland, San Francisco and Los Angeles. Since May, 1916, Mr. Reitze has been district engineer in charge of the Seattle office of the association and temporarily will be located in Seattle, although later he will have offices in San Francisco. Mr. Reitze, who is a native of Seattle, was general manager of the firm of Reitze, Storey & Duffy, general engineers, Seattle, from 1905 to 1916.

Mr. A. P. Denton, formerly district engineer of the Dallas office of the association, assumes charge of the San Francisco office as district engineer. Mr. Denton has been district engineer at Dallas since 1916. For a number of years he was connected with the County Engineers' office of King county, Wash., and from 1913 until joining the association forces was County Engineer of King county.

Mr. Charles A. Clark has been appointed district engineer of the Dallas office of the association, to succeed Mr. A. P. Denton.

## Clinton Fabric Sales

Mr. H. A. Larsen, Pacific coast sales manager of the L. A. Norris Co., San Francisco and Los Angeles, reports having sold to Los Angeles county for use on the Castaic-Ventura concrete highway, Clinton welded fabric amounting to 115,000 sq. ft. 6x6-in. mesh, No. 6 wire and 155,000 sq. ft. 6x6-in. mesh, No. 8 wire. Mr. Larsen also furnished 450,000 sq. ft. Clinton welded fabric of all sizes to be used in the Ambassador hotel at Catalina and Wilshire boulevard.

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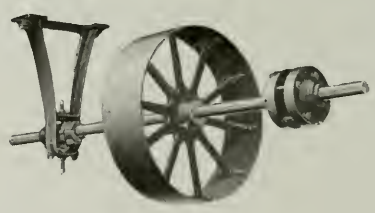

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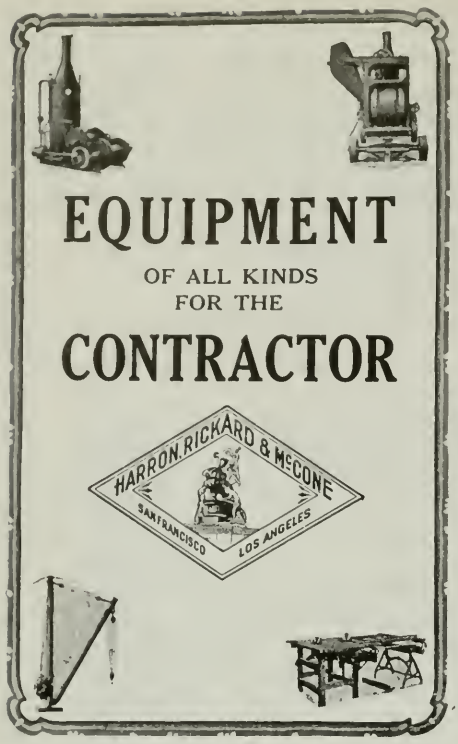


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# Communications

## Cost Plus Fixed Sum Contracts

Editor The Architect and Engineer,
San Francisco, Cal.

I am very much interested in the recent general movement to improve Contract Forms and arrangements; as indicated by articles in several magazines, including your February number, page 110.

I have recently developed an adaptation of the best arrangement I have heard of, with a few additional provisos, to care for certain chances of friction.

For my own use, I have embodied this in first page of Specification, so that bidders would get it from the start.

For the advance of the General Welfare, I enclose two copies, one for you and the other I wish you would kindly forward to the "Committee of Contracts of the Associated General Contractors of America," now working on improvements for general adoption; and whose address I have not now at hand.

You may remember that in your issue of May, 1907, Mr. Wm. Ham Hall, C. E. clearly showed that of four main forms of contract in use, by far the best was this "Cost Plus a Fixed Sum, *With Bonus or Penalty.*"

Especially because it not only is eminently fair to all parties, but it so decidedly induces active and genuine *co-operation*, in place of the old intolerable and ruinous clashing of opposed and greedy private interests.

As a step of further advance in improvement I wish intensely somebody would work out a practicable plan by which good workmen also might share the new spirit of co-operation and receive a reasonable, equitable return for improved efficiency and helpfulness. There is distressing need of it.

In this direction lies a great hope for better conditions in many things.

Very sincerely yours,

LOUIS C. COWLES,
Architect.

Santa Rosa, March 1, 1920.

EXTRACT FROM SPECIFICATIONS FOR COST PLUS FIXED SUM CONTRACT WITH BONUS OR PENALTY

Every bid shall state a fixed sum for which the Contractor will execute the work complete (as indicated by plans and specifications); this sum to be his sole compensation for his part in the work and the use of his organization and equipment; not to be augmented by commission, discount, rebate or other profit, hidden or known.

Every bid shall also include a careful estimate of the net cost of the work; and bidders are urged to preserve their figures in detail for reference by themselves and Owner or Architect, to facilitate settlements, or any changes, and to help keep account of actual costs.

Then it is provided that if the actual cost of the work is *less* than the Estimate, the difference saved shall be divided equally between the Owner and Contractor; also if the actual cost is greater than the Estimate the excess shall be equally bourne by the Owner and Contractor, the contractor's part being deducted from his fixed sum compensation mentioned above.

(The main purpose of this arrangement is to bring about actual friendly co-operation, in mutual confidence and helpfulness, in place of opposition of private interests.)

It is provided that if the cost be increased by fault of contractor or his men, such as neglect, carelessness, known wilful act, continuous loafing or correction of faulty work; he shall bear the loss due to such fault without the owner sharing it.

It is also provided that if the cost is increased by fault or act of the owner, such as failure to pay agreed-on installments as due, or changes after work affected is under way, or unreasonable

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delay in deciding what to do; the less due to this condition shall be bourne by the owner without the contractor sharing it. (All as nearly as can be estimated and made practicable in either case.)

Daily or frequent reports of work done, to owner or his agent, should be made, as a check on any trouble liable to arise.

## Library of Congress Wishes Back Number

Editor The Architect and Engineer,
San Francisco.

I have the honor to acknowledge your letter of March 2, stating that you are unable to furnish all the copies of your publication desired by the Library of Congress to complete its file.

May I, however, venture this suggestion, that a brief notice in the columns of your periodical, calling attention to the Library's needs, might be of great assistance in collecting odd numbers now out of print.

If you are willing to extend this aid, it may secure to the Library the complete file which we are sure it will be your desire, as it is ours, to have deposited in the National Library. The numbers or volumes needed are noted below.

The Library needs the Architect and Engineer, Vol. 55, No. 1, January 1919.

Very respectfully,
Herbert Putnam,
Librarian of Congress.

Washington, D. C.

## Theatre Alterations

Mr. Milton Latham, architect at 454 Montgomery street, San Francisco, has prepared plans for extensive alterations to the Novelty Theatre at Martinez. Mr. Latham is preparing drawings for a $60,000 country house near Burlingame and he has recently let a contract for an addition to the furniture factory of S. & G. Gump.

## Two Country Residences

Messrs. Bakewell & Brown, 251 Kearny street, San Francisco, have prepared plans for two large country houses. One will be in the English type and will be erected near the Jackling Place at Hillsborough for Mr. W. C. Van Antwerp, by W. C. Duncan & Co. The house will cost in the neighborhood of $100,000. The second house is for Mr. J. Henry Meyer and will be built at Palo Alto at a cost of $70,000.

## Don Lee Sales Building

Messrs. Weeks and Day, architects of San Francisco, have been commissioned to prepare plans for the Don Lee garage and sales building—an eight story reinforced concrete structure to be erected on the northeast corner of O'Farrell street and Van Ness avenue, San Francisco, at an approximate cost of $500,000.

## Cannery At Stockton

Messrs. Binder & Curtis, architects of San Jose, prepared the plans for the large frame cannery and warehouse now under construction at Stockton for the Richmond-Chase Company of San Jose. Mr. Z. O. Field is the contractor, who was given the work on percentage.

## Ross Valley Home

Mr. Albert Farr, architect in the Foxcroft building, San Francisco, has completed plans for a $16,000 home to be built at Ross Valley, Marin County, for Mrs. Thomas O'Connell.

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Manager

### Office of W. C. Hays Busy

New work in the office of Mr. W. C. Hays, architect in the First National Bank building, San Francisco, includes the second unit of the Berkeley High School group, consisting of a gymnasium with concrete frame and hollow tile curtain walls and estimated to cost $175,000; a $40,000 reinforced concrete warehouse at 16th and San Bruno avenue, San Francisco, for the Lick School; a $40,000 Fraternity House at Piedmont and Channing Way, Berkeley, for the Alpha Delta Phi; a $20,000 private school in San Francisco and a $60,000 hospital in Santa Cruz.

### Redlands High School

Mr. Edwin Bergstrom, Citizens National Bank building, Los Angeles, is preparing plans for a new intermediate high school building at Redlands to cost $185,000.

### St. Francis Wood Houses

New houses being designed by Mr. Henry H. Gutterson, 278 Post street, San Francisco, for the St. Francis Wood District, include a two-story frame nine-room residence for Dr. Walace Smith and a two-story stucco residence for Mr. Clyde Beal of the Anglo London Paris National Bank.

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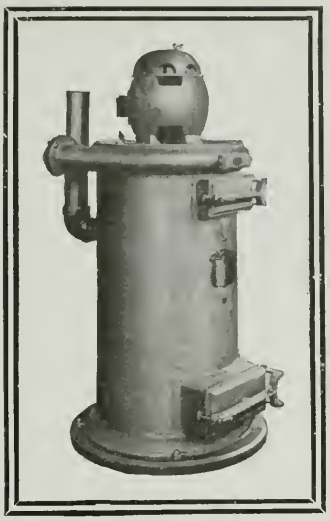

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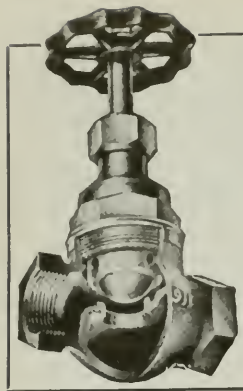

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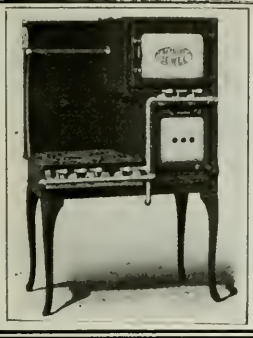

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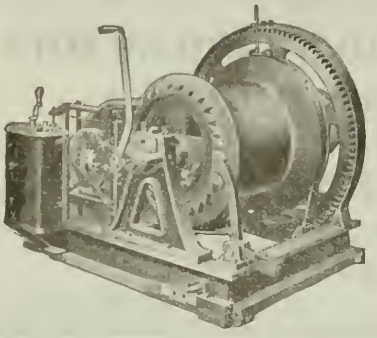

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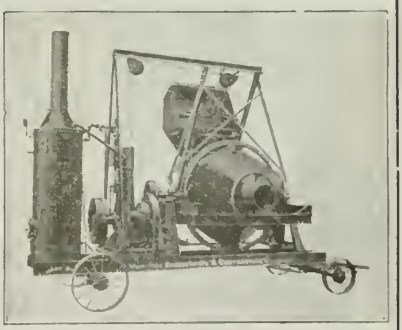

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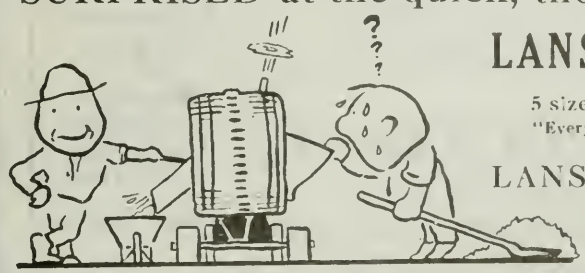

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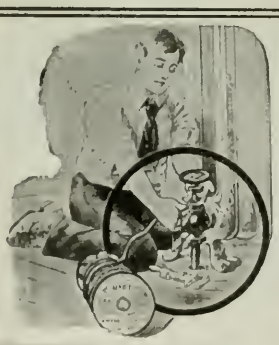

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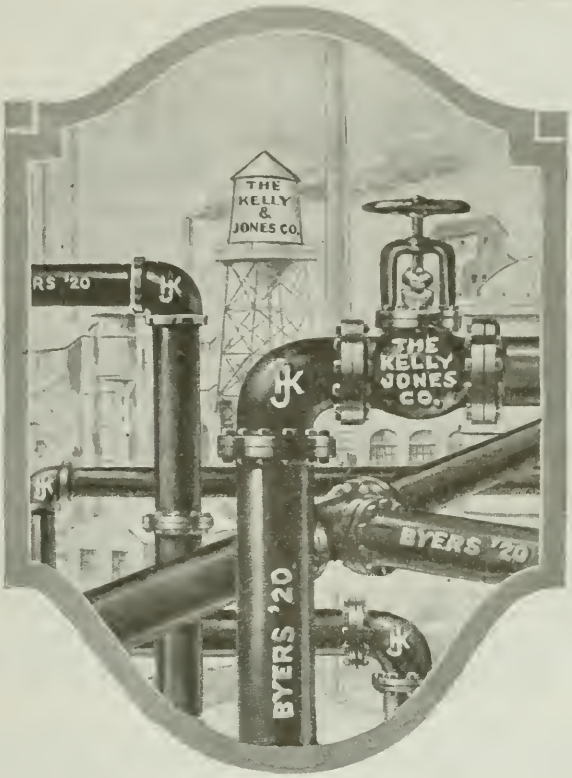


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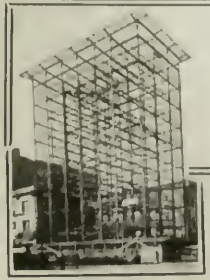

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MAY, 1920

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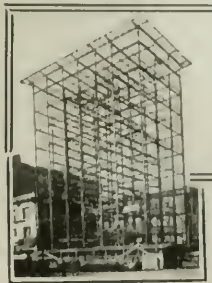

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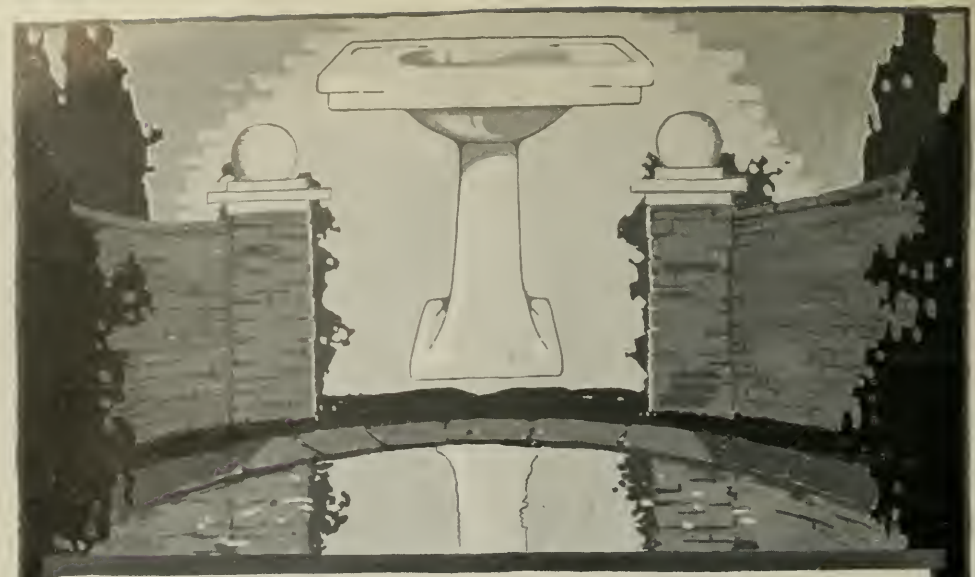

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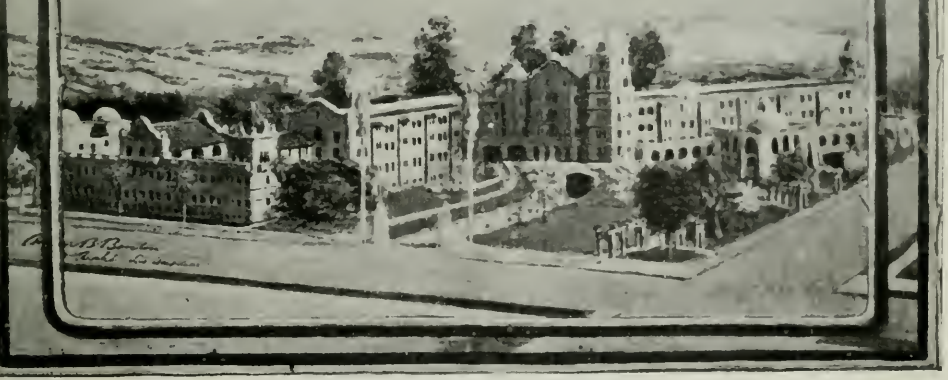


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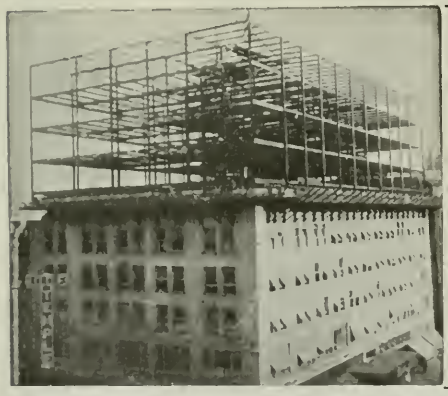

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- Old Mission Portland Cement Co., Mills Building San Francisco.

CEMENT EXTERIOR FINISH
- Concreta, sold by W. P. Fuller & Co., all principal Coast cities.
- Glidden Stucolor Liquid Cement Coating. The Glidden Company, 123 Hooper St., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies Oakland, Los Angeles, Portland, Tacoma, Spokane; and Pacific Building Materials Co., 525 Market St., San Francisco.
- The Paraffine Companies, Inc., 34 First St., San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
- Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
- Bay State Brick and Cement Coating, manufactured by Wadsworth, Howland Co., Boston, Mass.
- James Hambley & Son, Distributors, San Francisco and Los Angeles.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
- Paraffine Paint Co., 34 First St., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING
- Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.
- Glidden Concrete Floor Dressing. The Glidden Company, 123 Hooper St., San Francisco.

CEMENT GUN
- Cement Gun Construction Company of California, 701 Balboa Bldg., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS
- Fink & Schindler, 218 13th St., San Francisco.
- Mullen Manufacturing Company, 64 Rausch St., San Francisco.
- Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL
- Haslett Warehouse Co., 310 California St., San Francisco.

CLAY PRODUCTS
- Livermore Fire Brick Works, 604 Mission street, San Francisco.
- W. E. Mushet Co., 502 Mission St., San Francisco.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- United Materials Co., Crossley Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS
- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
- Vulcan Iron Works, San Francisco.

COMPRESSED AIR CLEANERS
- United Electric Co., Canton, O., mfr. of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

CONCRETE CONSTRUCTION
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Clinton Construction Co., 140 Townsend street, San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Palmer & Petersen, Monadnock Bldg., San Francisco.
- Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE MIXERS
- Austin Improved Cube Mixer. Stuart S. Smith, 625 Market Street, San Francisco.
- Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.
- Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.
- Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.

CONCRETE REINFORCEMENT
- United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE REINFORCEMENT (Continued)
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
- Pacific Coast Steel Company, Rialto Bldg., San Francisco.
- Steel bars sold by W. S. Wetenhall Co., 450 Irwin St., San Francisco.
- Triangle Mesh Fabric. Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
- Truscon Steel Co., 527 Tenth St., San Francisco.

CONDUITS
- Garnett, Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
- Barrett & Hilp, Sharon Bldg., San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- R. W. Littlefield, 357 12th St., Oakland.
- Unit Construction Co., Phelan Bldg., San Francisco.
- Larsen, Sampson & Co., Crocker Bldg., San Francisco.
- J. D. Hannah, 142 Sansome St., San Francisco.
- Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
- Herbert Beckwith, 323 Newton Ave., Oakland.
- A. D. Collman, 110 Jessie St., San Francisco.
- Clinton Construction Company, 140 Townsend St., San Francisco.
- Monson Bros., 1907 Bryant St., San Francisco.
- W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
- A. Knowles, Call-Post Bldg., San Francisco.
- T. B. Goodwin, 110 Jessie St., San Francisco.
- Lange & Bergstrom, Sharon Bldg., San Francisco.
- McLeran & Peterson, Hearst Bldg., San Francisco.
- Robert Trost, 26th and Howard Sts., San Francisco.

CONTRACTORS' EQUIPMENT
- Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
- Harron, Rickard & McCone, Townsend St., San Francisco.
- Garfield & Co., Hearst Bldg., San Francisco.
- Smith, Booth-Usher Co., 60 Fremont St., San Francisco; 228 Central Ave., Los Angeles.

CONTRACTORS' INSURANCE
- Bankers & Shippers Insurance Co. of New York, Insurance Exchange Bldg., San Francisco.

CONVEYING MACHINERY
- Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
- P. H. Reardon, 57 First St., San Francisco.

CORK INSULATION
- Van Fleet-Freear Co., Sharon Bldg., San Francisco.

DAMP-PROOFING COMPOUND
- Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
- Glidden's Liquid Rubber. The Glidden Company, 123 Hooper St., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
- "Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS
- Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
- Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
- Stanley Works, New Britain, Conn. John Rountree, agent, Monadnock Bldg., San Francisco.
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
- Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
- Crane Company, San Francisco, Oakland, and Los Angeles.
- Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
- Spencer Elevator Company, 173 Beale St., San Francisco.
- M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS
- Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
- Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
- Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
- NePage, McKenny Co., 589 Howard St., San Francisco.
- Newbery Electrical Co., 413 Lick Bldg., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
- Globe Electric Works, 1959 Mission St., San Francisco.
- M. E. Ryan, Redwood City, Calif.
- Rex Electric & Engineering Co., 253 Minna St., San Francisco.
- H. S. Tittle, 766 Folsom St., San Francisco.
- Severin Electrical Company, 185 Stevenson St., San Francisco.
- Spott Electrical Co., Sixteenth and Clay Sts., Oakland.

ELECTRIC PLATE WARMER
- The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
- Sierra Electric Company, 515 Market St., San Francisco.
- Garnett, Young & Co., 612 Howard St., San Francisco.
- Butte Electrical Equipment Co., 530 Folsom St., San Francisco.
- Safety Electric Company, 56-65 Columbia Square, San Francisco.
- Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.

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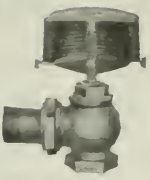

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.

ELEVATOR EQUIPMENT
- Elevator Supplies Company, Inc., 186 Fifth St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.
- Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

ELEVATOR DOOR HARDWARE
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

FANS AND BLOWERS
- John Ringius, 252 Townsend St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
- Standard Fence Construction Co., 77 O'Farrell St., San Francisco, and 310 12th St., Oakland.

FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco, 830 S. Los Angeles St., Los Angeles.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.
- Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE INSURANCE
- Bankers & Shippers Insurance Co., Insurance Exchange Bldg., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- Grinnell Company, 453 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.
- Asbestos Paints. The Glidden Company, 123 Hooper St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco,

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
- Inlaid Floor Company, 600 Alabama St., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
- Jas. A. Nelson, 517 Sixth St., San Francisco.

FUEL OIL SYSTEMS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, OFFICE, HOUSE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.
- F. W. Wentworth & Co., 539 Market St., San Francisco.
- Western Office Equipment Co., 467 Market St., San Francisco.
- W. & J. Sloane, 216-228 Sutter St., San Francisco.

GALVANIZED IRON WORK
- Power & Pike Co., 22-24 Main St., San Francisco.
- James A. Nelson, 517 Sixth St., San Francisco.

GARAGE HARDWARE
- The Stanley Works, New Britain, Conn., represented in San Francisco, Los Angeles, Seattle by John T. Rowntree, Inc.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

GARBAGE CHUTES
- Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 745 Folsom St., San Francisco, sole agents for California.

GAS STEAM RADIATORS—FUMELESS, ETC.
- Clow Gas Steam Radiators, F. A. Hamilton, Agent, 101 Rialto Bldg., San Francisco.
- Ra-Do Fumeless Gas Radiators, manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

GLASS
- American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
- W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
- Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.
- J. O'Shea, 2100 17th St., San Francisco.

GRANITE
- California Granite Co., Gen. Contractors' Ass'n, San Francisco.
- Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
- Cement Rock & Gravel Co., Call-Post Bldg., San Francisco.
- Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
- Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
- Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
- The Stanley Works, New Britain, Conn.
- Corbin hardware, sold by Palace Hardware Co., 581 Market St., San Francisco.
- Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
- Inlaid Floor Co., 600 Alabama St., San Francisco.
- H. N. McNab, 2307 17th Ave., Oakland.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., cor. Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC—GAS
- Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC.
- Alex Coleman, 706 Ellis St., San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Knittle Cashel Co., Inc., 1820 Ellis St., San Francisco.
- General Boilers Co., 332 Monadnock Bldg., San Francisco.
- A. Lettich, 365 Fell St., San Francisco.
- Mangrum & Otter, 827-831 Mission St., San Francisco.
- Moline Heat, Hobart Bldg., San Francisco.
- James & Drucker, 450 Hayes St., San Francisco.
- James A. Nelson, 517 Sixth St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
- Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
- William F. Wilson Co., 328 Mason St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- O. M. Simmons Co., 58 Sutter St., San Francisco.

HOLLOW TILE BLOCKS
- Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
- Ralphs-Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
- Mott Company of California, 553 Mission St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
- Holtzer-Cabot system, represented by Bittmann & Battee, 745 Folsom St., San Francisco.
- Chicago Signal Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.

HOTELS
- St. Francis Hotel, Powell, Geary and Post Sts., San Francisco.

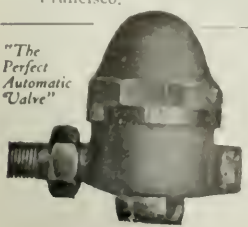
ICE MAKING MACHINES
- Vulcan Iron Works, San Francisco.

INGOT IRON
- "Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
- Ebonite Boiler Kote, sold by California Plastic Products Co., 521 Sheldon Bldg., San Francisco.

INTERIOR DECORATORS
- Beach-Robinson Co., 239 Geary St., San Francisco.
- Sonnenschein Bros., 470 Sutter St., San Francisco.
- F. A. Taylor & Co., 251 Post St., San Francisco.
- The Tormey Co., 1042 Larkin St., San Francisco.
- Freeman Art Shop, 386 Sutter St., San Francisco.
- W. & J. Sloane, 216 Sutter St., San Francisco.

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JOSEPH MUSTO SONS-KEENAN CO.

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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

KITCHEN CABINETS
Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

KITCHEN EQUIPMENT
James A. Nelson, 517-19 Sixth street, San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, Call-Post Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
Jas. F. Smith, 273 Minna St., San Francisco.

LATHING MATERIAL
Pacific Materials Co., 525 Market St., San Francisco.
Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
W. & J. Sloane, 216-228 Sutter St., San Francisco.

LOCKERS—STEEL
George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
California Redwood Association, 216 Pine St., San Francisco.
Dudfield Lumber Co., Palo Alto, Cal.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Sunset Lumber Company, First and Oak Sts., San Francisco.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

METAL DOORS AND WINDOWS
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 330 Tenth St., San Francisco.

MILL WORK
Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.

OIL BURNERS
American Standard Oil Burner Company, Berkeley.
Fess System Co., 220 Natoma St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
G. E. Witt Co., 862 Howard St., San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

OFFICE EQUIPMENT
Western Office Equipment Co., 467 Market St., San Francisco.
F. W. Wentworth & Co., 539 Market St., San Francisco.

ORNAMENTAL IRON AND BRONZE
California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

OVERHEAD CARRYING SYSTEMS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

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Bargain Lists for Auto Sales Companies. Sold outright.
**Go-Sign and Letter Manufacturing Co.**
1106 Franklin Street Oakland

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- The Paraffine Companies, Inc., 34 First St., San Francisco.
- Anti-Rust Coatings. The Glidden Co., 123 Hooper St., San Francisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Wadsworth, Howland Co., makers of Bay State Brick and Cement Coating, Boston, Mass. Hambley & Son, Distributors in San Francisco and Los Angeles.

PAINTING, TINTING, ETC.
- I. R. Kissel, 1747 Sacramento St., San Francisco.
- D. Zelinsky & Sons, San Francisco and Los Angeles.
- The Tormey Co., 681 Geary St., San Francisco.
- Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
- California Paint Company (see advertisement above).
- Magner Bros., 414-424 Ninth St., San Francisco.
- Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
- The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
- The Glidden Company of California, 123 Hooper St., San Francisco.
- R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
- W. P. Fuller & Co., all principal Coast cities.
- "Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.
- Palace Hardware Co., 581 Market St., San Francisco.

PANELS AND VENEER
- White Bros., Fifth and Brannan Sts., San Francisco.

PARTITIONS—FOLDING AND ROLLING
- J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PAVING BRICK
- California Brick Company, Niles, Cal.

PENCILS
- Eberhard Faber, Monadnock Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
- Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE COVERINGS
- The Paraffine Companies, Inc., 34 First St., San Francisco.

PLASTER CONTRACTORS
- A. Knowles, Call-Post Bldg., San Francisco.
- MacGruer & Simpson, 540 Call-Post Bldg., San Francisco.
- James F. Smith, 273 Minna St., San Francisco.

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- Alex Coleman, 706 Ellis St., San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- A. Lettich, 365 Fell St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
- California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
- Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
- Crane Co., San Francisco, Oakland, Los Angeles.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
- H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
- Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
- Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- Wm. F. Wilson Co., 328 Mason St., San Francisco.
- Whale-bone-ite Fixtures, sold by E. C. Whalen, 325 Monadnock Bldg., San Francisco.

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- Knittle-Cashel Co., Inc., 1820 Ellis St., San Francisco.

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- Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.
- P. H. Reardon, 57 First St., San Francisco.

PUMPS
- Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
- Dow-Herriman Company, 140 Howard St., San Francisco; factory, Petaluma.
- Simonds Machinery Co., 117 New Montgomery St., San Francisco.
- Ocean Shore Iron Works, 558 Eighth St., San Francisco.
- Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
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Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, Monadnock Bldg.

REVERSIBLE WINDOWS
Hauser Window Company, 157 Minna St., San Francisco.

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Bender Roofing Company, Monadnock Bldg., San Francisco.
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
The Vulcanite Roofing Co., Texas and 16th Sts., San Francisco.
H. H. Robertson Co., Hobart Bldg., San Francisco.

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
Pacific Materials Co., 525 Market St., San Francisco.

SAND
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
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Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

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The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK
Jas. A. Nelson, 517 Sixth St., San Francisco.
Power & Pike Co., 22-24 Main St., San Francisco.

SHINGLE STAINS
Bass-Hueter Paint Company, all principal Coast cities.
Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francicco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.
Argonaut Shingle Stains. The Glidden Co., 123 Hooper St., San Francisco.

SINKS—COMPOSITION
Petrum Sanitary Sink Co., Fifth and Page Sts., Berkeley.

SKYLIGHTS
H. H. Robertson Co., Hobart Bldg., San Francisco.
Jas. A. Nelson, 517 Sixth St., San Francisco.

STATIONERY AND SUPPLIES
Schwabacher-Frey Stationery Co., 609 Market St., San Francisco.

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.

STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Western Pipe & Steel Co., 444 Market St., San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

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Badt-Falk & Co., Call-Post Bldg., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Truscon Steel Co., 527 Tenth St., San Francisco.
W. S. Wetenhall Co., 725 Second St., San Francisco.

STEEL ROLLING DOORS
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., agents, Underwood Bldg., San Francisco.
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles.

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"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
U. S. Metal Products Company, 330 Tenth St., San Francisco.

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United Materials Co., Crossley Bldg., San Francisco.

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United Electric Company, Canton, O., manufacturers of Tuec Cleaners, sold in California by San Francisco Compressed Air Cleaning Co., Stockton and Sutter Sts., San Francisco.

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Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
Sloane Valves, sold by E. C. Whalen, 325 Monadnock Bldg., San Francisco.
Grinnell Co., 453 Mission St., San Francisco.
O. M. Simmons Company, 58 Sutter St., San Francisco.
H. Mueller Mfg. Co., 635 Mission St., San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

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N. H. Cook Belting Co., 317 Howard St., San Francisco.

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California Paint Company, 1797 Twelfth St., Oakland.
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The Glidden Company, 123 Hooper St., San Francisco.
Standard Varnish Works, 55 Stevenson St., San Francisco.

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Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.

WALL BOARD—Continued.
"Liberty" Wall Board, manufactured by Key-Hold Plaster Lath Co., 148 Hooper St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.
W. & J. Sloane, 216-228 Sutter St., San Francisco.
Uhl Bros., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Bay State Brick & Cement Coating, manufactured by Wadsworth, Howland Co., Boston; Hambley & Son., Distributors for Northern and Southern California.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE CEMENT
"Atlas White," see coast agencies, page 127.
"Medusa White," sold by Pacific Materials Co., Underwood Bldg., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass-Hueter Paint Co. All principal Coast cities.
Velvet White Enamel. The Glidden Company, 123 Hooper St., San Francisco.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOW SHADES
W. & J. Sloane, 216-228 Sutter St., San Francisco.

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Hauser Window Co., 157 Minna St., San Francisco.
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Clinton Wire Lath, sold by L. O. Norris, 140 Townsend St., San Francisco.

WIRE FENCE
Standard Fence, 310 12th St., Oakland.

WOOD MANTELS
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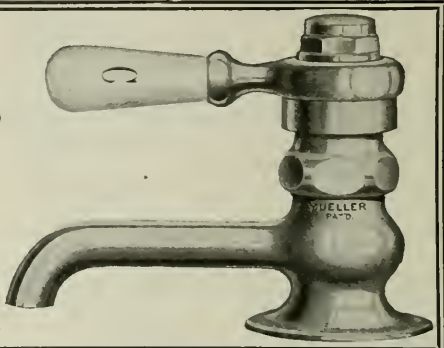


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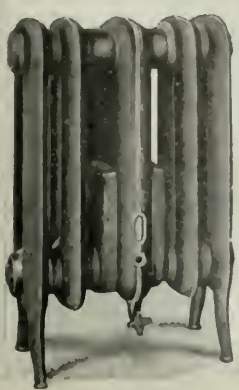

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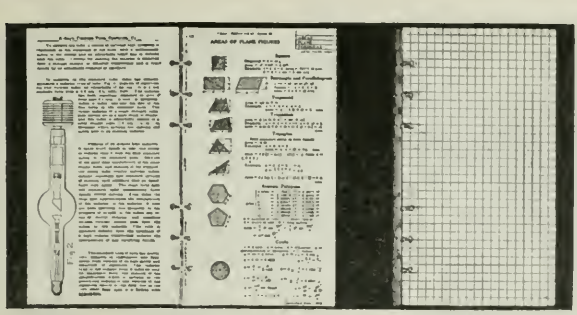

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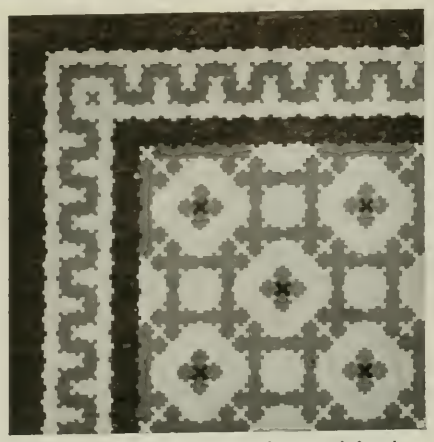

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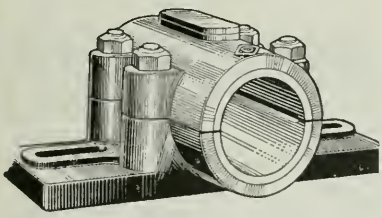

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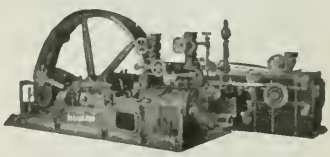

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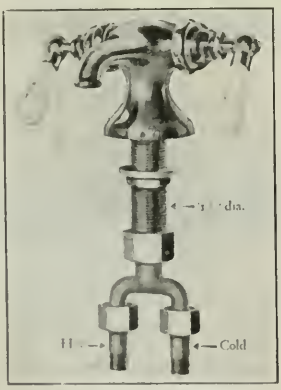


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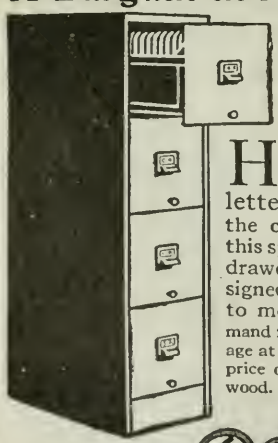

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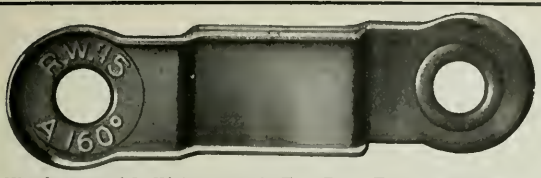


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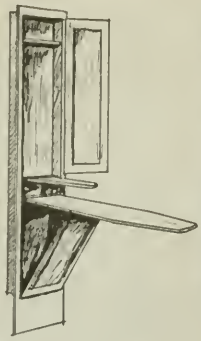

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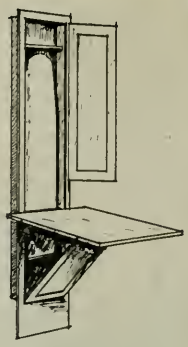

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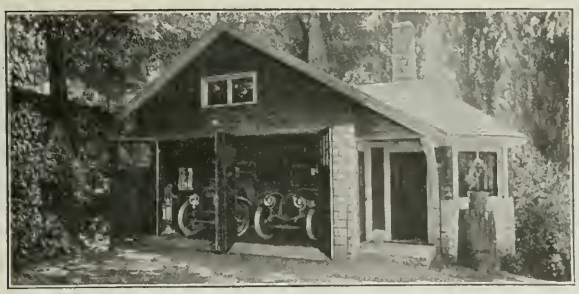

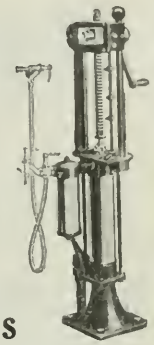

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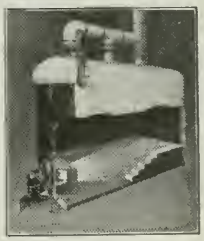

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# The Architect and Engineer

Volume LXI. Incorporated Number 2

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THE ARCHITECT AND ENGINEER

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626-627 FOXCROFT BUILDING, SAN FRANCISCO

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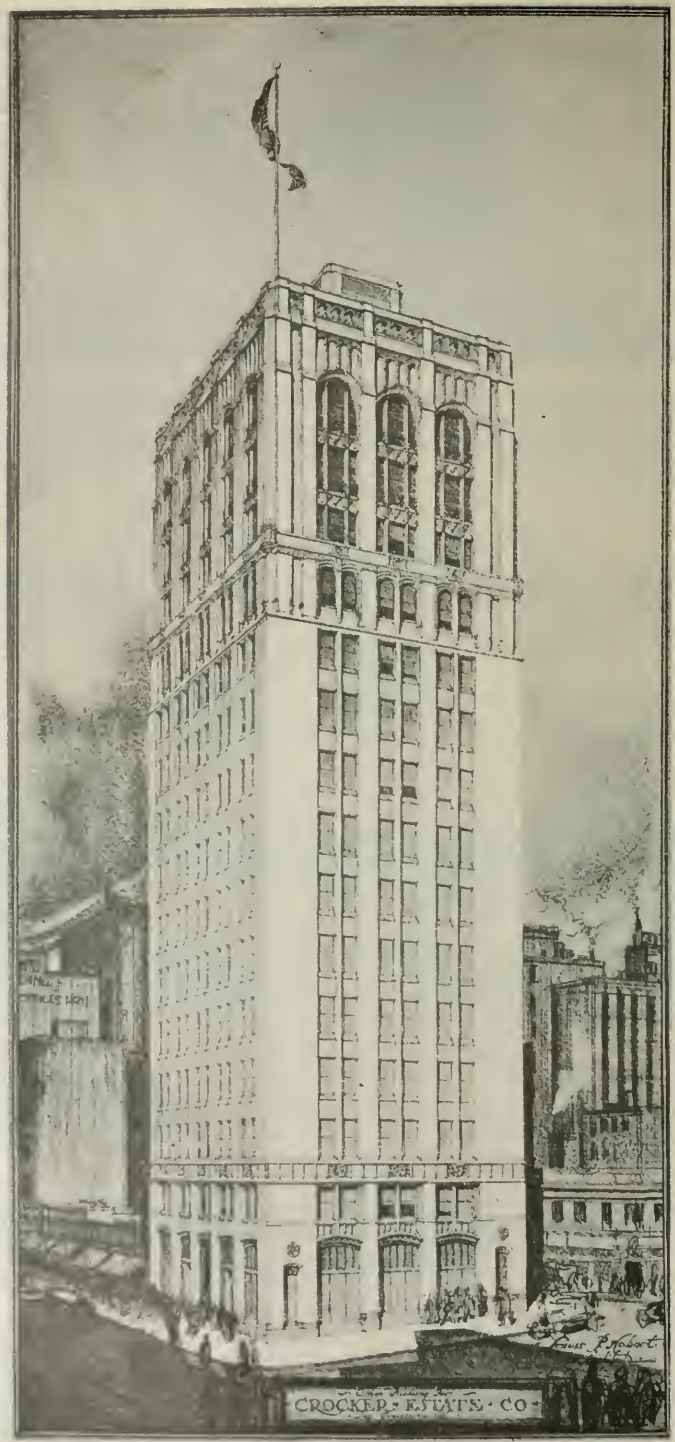



OFFICE BUILDING FOR THE CROCKER ESTATE COMPANY, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

THE
ARCHITECT
AND
ENGINEER

SAN FRANCISCO, MAY, 1920 VOL. LXI. No. 2.

# Some New San Francisco Buildings

By IRVING F. MORROW.

WHERE streets were but recently blocked with marching soldiers they are now encumbered with concrete runways and material piles; mounting scaffolds supplant gaudy bunting; and the braying of military bands is drowned by the rapping of riveters. Frankly we welcome the change. Three of the city's new structures appear on the following pages—one in process of completion, the other two available to date only in the architect's perspectives.

Mr. McCall has done a creditable piece of work with the Robert Dollar building. It posessses interest and grace, although the handling errs on the side of prettiness. But, then, there was the original building, to which alterations and additions had to be accommodated; which, if recollection serves us aright, was even more crude than would appear from the "before" photograph, where scaffolding mercifully screens an unpardonable lower story. The remodeled building so far surpasses its unpromising start that it seems captious to quibble.

We admire the reserve of Mr. Hobart's Seaman's Church Institute building. It is quiet, even retiring; one might describe it as old-fashioned, in the more affectionate sense of that term. The base, although not exactly solid, is open without weakness; the wall is dignified, and there is a pleasant quaintness to the termination. Just because it is so fresh and agreeable in these respects we regret the inconclusive placing of the corner flèche. Undoubtedly the roof plan shows this feature located with its center precisely at the intersection of the axes of the corner bay and the end bays of the two side facades; but for all this probable geometrical accuracy, it remains architecturally uncertain. It suggests an element set upon the roof and movable thereupon at will, rather than one growing out of a structure in which it is rooted. That the problem has been felt is obvious, but the measures adopted to meet it—balconies and diaper patterns at the corner bays, with breaks and finials in the parapet—are inadequate. It has, withal, a whimsical naiveté not at all inconsistent with the spirit of the building, and in any case we can only feel grateful for the introduction of some subtlety of modulation into the crude angularity of our typical sky lines. Be-

cause of its substantial plain surfaces, material and texture are going to play an important part in the building's ultimate effect.

Mr. Hobart's building for the Crocker Estate Co. is admirable in scheme. It is strong, vigorous, and it soars. The base is firm, the piers are solid, the top lightens well, and there is an insistence on verticality quite proper to a structure of its nature and dimensions. But it stops just short of any real thrill.

ROBERT DOLLAR BUILDING, SAN FRANCISCO, BEFORE ALTERATIONS AND ADDITIONS
W. S. Schmolle, Architect

This we believe is due principally to two causes. In the first place, the handling of the smaller elements is too coarse and blocky. And in the second place, the horizontals tend to contradict too decisively the dominant verticality. We feel that the string courses all offer unnecessary obstruction to the continuity of the verticals; also that the top sets too abruptly on the shaft, merging insuf-

ficiently into it. There is too definite a stratification in what is obviously striving to grow. We hope that this upward tendency may be given further encouragement in the working out, for we recognize the essentials of a thing of genuine distinction.

As examples of well considered and straightforward architectural presentation, Mr. Kent's drawings showing Mr. Hobart's two buildings are excellent.

ROBERT DOLLAR BUILDING, AFTER ALTERATIONS AND FIVE-STORY ADDITION
C. W. McCall, Architect
T. Ronneberg, Structural Engineer
Dinwiddie Construction Co., Builders

Undoubtedly we are entering upon a period of reviving building activity. If the quality of these new structures is to serve as a standard for forthcoming work, we shall approach the future with more equanimity than has always been possible in the past. What the real estate supplements unctuously describe as ornaments to our city may actually turn out to be such.

BUILDING FOR THE SEAMAN'S INSTITUTE
THE EMBARCADERO, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

MEN'S DINING ROOM, TOWNSEND'S STORE, SAN FRANCISCO
Alfred Kuhn, Architect

# Store Interiors

By ALFRED KUHN, Architect*

A DECIDED change and marked improvement has taken place in recent years in store interiors, as the merchant of today, who keeps abreast of the times, recognizes the influence that artistic surroundings have on the general public, and so he is beginning to realize more and more the importance as well as the necessity of making his store not only attractive as to quality of merchandise and service, but attractive from an aesthetic point of view; hence the modern stores are gradually developing into well designed, pleasing and harmonious interiors, when placed in the hands of competent architects.

For many years the business man who made a success in his particular line, concentrated his attention principally on guessing what the general public

* 833 Market Street, San Francisco, California.

INTERIOR TOWNSEND'S STORE, SAN FRANCISCO
Alfred Kuhn, Architect

TEA ROOM, TOWNSEND'S STORE, SAN FRANCISCO
Alfred Kuhn, Architect

DISPLAY ROOM, WERNER SHOE STORE
Alfred Kuhn, Architect

GENERAL VIEW, WERNER SHOE STORE
Alfred Kuhn, Architect

GENERAL VIEW, TRAINA'S STORE
Alfred Kuhn, Architect

TEA ROOM, TRAINA'S STORE
Alfred Kuhn, Architect

wanted, buying it at wholesale and selling at a fair profit; merchandise, quality and price, and then displaying them in a conglomeration of various showcases, wallcases and shelving; at least that was the average impression they made, and placed so that they would hit you in the eye, so to speak, when you entered his establishment.

No thought was given to the general effect and appearance of his store as a whole, which was always overlooked, as he considered it only from a business point of view, or practical standpoint.

When a new store was contemplated, or changes made, he called in a carpenter or cabinet maker, and had him chalk off on the floor, various cases, counters and shelving according to his requirements; a floor plan on the job in every sense of the word.

Every foot of available wall space was covered with continuous unbroken lengths of shelving, never modified or interrupted in any way; if it was a shoe store, they extended to the ceiling. A corresponding row of benches or settees, a case here and a counter there, depending on the left over floor space, and when it was all said and done, the final result has always been an unattractive and barren interior, especially when applied to a shoe store.

If by chance any wall space was left uncovered, it was decorated; the extent of the decoration being limited to a coat of kalsomine, light cream being the popular shade. The floors which were always uninviting in appearance, would receive a coat of oil from time to time to keep the dust down, a treatment considered very practical, regardless of how the flooring had worn and slivered in the meantime.

The services of a good architect never were considered, or thought necessary, yet the merchant must admit that it is just as important, in fact more so, to have a well designed store, as it is to have a pleasing and artistic home. Not only is the merchandise displayed to better advantage, but it appears more attractive with proper surroundings.

There are many difficulties to be overcome in each store. As a rule, the principal ones to be considered are the individual requirements, for it must be practical. However, concessions must be made on both sides to get best results. Existing fixed structural conditions, that cannot be altered or removed, require careful thought and study before they are solved, and usually when one has finally arrived at the solution of the problem, the alterations would uncover some new obstruction with the result that an otherwise perfect scheme goes glimmering, or at least making a radical change necessary.

Structural columns usually spaced by various requirements in the upper part of the buildings give the most trouble, especially if they are not spaced equally apart, yet they very often fix the general plan and wall treatment. Too much furring out would mean a sacrifice of floor space which is becoming more valuable each year and so the cloth must be cut to fit the garment.

In the case of the accompanying view of the shoe store, a large column hit about the center of the store in depth, ten feet from the side wall, the position of which appeared to be almost hopeless, but it was eventually tied together in such a way as to make a very pleasing and at the same time practical store, developing an entrance room and alcove for forward or special stock, general stock room to rear and utility rooms on column side with mezzanine floor over.

In Townsend's new store in San Francisco a column occurred in the center on the street building line. As a central entrance was required, there was no way of getting around it on account of the narrow frontage, so that amputation and removal was the only cure, plus a new plate girder, and cantilever foundation under existing piers.

Then again plumbing stacks and steam risers are invariably just where they should not be, ventilating ducts must be concealed and innumerable difficulties

INTERIOR, HUNNECUTT STORE, SAN FRANCISCO
Alfred Kuhn, Architect

must be overcome, that are continually cropping up on the job and must be taken care of in the general scheme. Existing ceilings must be lowered to make a well proportioned room, or treated in such a way to appear lowered. Stores of narrow width must be designed to give a wide impression, or if of great depth, separated into different divisions to break tiresome repetition of detail.

If the requirements of the establishment permit a series of rooms, various decorative features can be provided, and yet treated in such a way as to preserve a harmonious effect as a whole, especially in a store of considerable depth and narrow width, to avoid an otherwise monotonous interior.

Of course, the practical essentials must be considered as well in arrangement of any business establishment, and the architect who makes a specialty of store interiors, can incorporate valuable features which provide greater efficiency to service. Beauty of surroundings together with the service rendered, makes a strong appeal to the general public, so if the investment is only considered from a commercial point of view, a well designed, attractive practical store, forms an additional asset to the merchant, for it means a greater volume of business demonstrated by liberal patronage, to smart modern shops.

* * *

## Honor for San Francisco Architect

Mr. Arthur Brown, member of the firm of Bakewell & Brown, architects of San Francisco, has been accorded the honor of Corresponding Membership in the Academy of Fine Arts of the French Institute. The honor of foreign membership has been given to only eight architects in the world and constitutes a reward of merit for general accomplishment. Accompanied by his wife, Mr. Brown is now en route to Paris, when the membership will be officially conferred upon him.

# Private Garages*

CLAPBOARD GARAGE FOR TWO CARS

THE house without a garage, be it attached or detached, is a difficult proposition to dispose of these days and the wise investor who builds to sell will see to it that there is a garage either in the basement of his house or in the back yard. By the end of this year it is estimated there will be 10,000,000 automobiles in use in this country. In one year the number of pleasure car owners has increased by 1,500,000, it is said. The average garage unfortunately is far from being an architectural ornament. Where the house has been built for some time and the garage has been put up to supply an urgent need, the owner usually builds as cheaply as possible—to be sorry for his penuriousness ever after. Four walls thrown together like a dry goods box are far from being an ornament to a private estate, and especially if the exterior finish does not harmonize with the house.

If the size of the property permits, it is advisable to have the garage at a fair distance from the house, and of such an architectural character as to blend harmoniously with it.

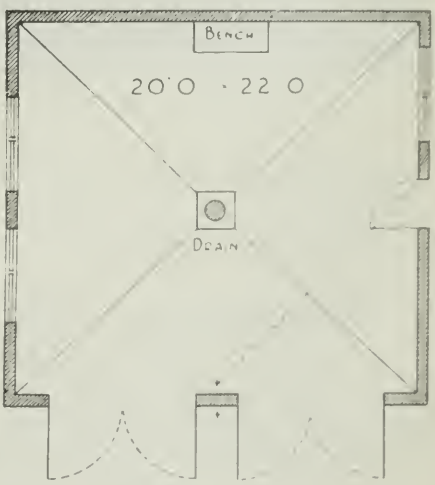
A fireproof garage is preferable, but not always necessary.

The building and its equipment should be of good quality, and it is well to remember that a good architect and contractor are usually an economy.

Although one may not now have any expectations of possessing more than one car, it is advisable to look into the future, and to provide space for a second or even a third. This extra space adds comparatively little to the cost and is frequently desirable for the housing of a visitor's car, and for other purposes. In many instances the additional space may be rented out to a neighbor.

Important items of garage comfort are:

A work bench.




GARAGE FOR TWO CARS AND PLAN

* Illustrations courtesy of The Stanley Works, New Britain, Conn.

A pit, to enable you to get under the car for cleaning and repairs.

A gasoline tank outside the garage, with pipe and pump inside.

Running water and a conveniently placed sink.

A drain in concrete floor.

Good natural and artificial lighting.

Heating apparatus.

Plenty of shelving, cupboards, and bins or racks for supplies.

Proper ventilating facilities.

STUCCO GARAGE FOR TWO CARS WITH CURVED TOP DOORS

To these should be added an entrance arrangement permitting all cars to enter or leave at the same time; doors that are so equipped as to swing open and shut easily, doors that close snugly and weather-tight, and that can be locked open so as to prevent a gust of wind slamming them against a car.

STUCCO GARAGE FOR THREE CARS

The many advantages in swinging the doors out on hinges should not be overlooked. Garage doors swung on hinges close snugly—as weather-tight as the front doors of your home. Hinges cost less to buy and less to apply than any other device and when the doors are up, one has a better looking, smoother acting piece of workmanship. No space is wasted operating doors on hinges. There is nothing to adjust or to get out of order. It is easier to swing heavy doors out than to push them back.

It is advisable to cement the floor wherever possible. The more expensive garages are equipped with a pit for oiling and repairing cars, an underground gasoline tank with pump attachment, chauffeur's quarters, plumbing, wiring, etc. Where there is no pit it is well to pitch the cement floor to the center, where a drain is provided. Closets and a work bench should not be overlooked.

* * *

## Would Reform State Highway Department

Mr. Wilson R. Ellis, in a letter to Hon. Wm. D. Stephens, governor of California, under date of March 23, tendering his resignation as secretary of the California highway commission, says he will "uncover conditions as they exist and let the light of day into the dark corners of the state highway department." Governor Stephens has announced that if the charges are justifiable he will order an investigation.

# Does Architecture Need a Salesman?

By EMERY STANFORD HALL, A.I.A., in The Architectural Forum

DOES Architecture need a salesman? Note the term—"Architecture"—not the Architect. It must be borne in mind that there is an important distinction between the term "architecture" and the term used for identifying the profession which designates its members as architects. It is likewise essential that the terms be clearly defined. Architecture is the outgrowth of human need—the reord of human desire. It is the manuscript by which we are able to read the souls that have lived and passed beyond. By it there are revealed the ideals, the aims, the aspirations of the peoples of the past. Architecture is the pen and ink and paper in the hands of the recording angel of the present. By it a knowledge of our civilization is made available for generations yet unborn. Is the motive of our action mean and narrow and selfish, or is it noble and liberal and magnanimous? It is alike recorded in enduring stone and fire-touched plastic clay. Architecture also is "the science and art of constructing and designing buildings"; the peculiar langauge of an age or people sometimes defined as "style of structure," but more properly defined as a style of human expression through material. In conclusion, then, is not architecture both the science and art of discovering, meeting and also the expressing of human need? Surely architecture is not mere material —such as brick and wood and stone—neither is it iron and glass, yet it is through the intelligent use of material that architecture performs its mission.

Does Architecture need a salesman? Let every preconceived notion be laid aside and let careful examination be made. Let there be no confusion of issue. The architectural welfare of the community is of far-reaching importance; it is vital to best existence. It is too essential to the paramount interests of the race to have its interest confused with those of a few little fellows who call themselves architects and use architectural practice as a means of livelihood. The world might dispense even with a Vitruvius or an Angelo; it has forgotten many of equal attainment; but the human world cannot dispense with Architectural Expression, neither can it dispense with the Science and Art of Building. For expression is an instinctive function of mankind. To deny expression to attainment would be almost equivalent to the destruction of ambition. Could there be faith or hope, certainly not love, without expression? While to build is only second in importance to the finding of food, it is essential to the preservation of food.

Does Architecture need a salesman? Is the salesman essential to public service? Can this medium be dispensed with? What is meant by the term "salesman"? Broadly stated, the term "salesman" has come to mean any medium of sale. Formerly the salesman was merely an advocate. His chief duty was to make sales—it was up to the house to hold customers. With him accuracy of statement was unimportant. It was up to the salesman to get orders signed; let the house take care of credits. What did it matter if the customer did buy goods unsuited to his trade, or that were useless for the purposes for which they were purchased? The salesman had made a sale and performed his full function. Ethics of salesmanship: Three words—"get the business," But now all of this is changed and a new philosophy has been worked out. To-day the accepted theory of the salesman's duty is quite different. To-day the good salesman searches for the consumer that would be benefited by a use of the wares of which he is charged with sale. He then proceeds to educate carefully the prospective customer to a sense of his real need, and in this campaign of education he bases his propaganda on provable facts. While the producer nominally pays the bill, the salesman's new code of ethics recognizes that in the last analysis it is, after all, the ultimate consumer

that does and must pay all costs; and if the consumer pays the cost of salesmanship, then he is entitled to a kind of salesmanship which will give to him a corresponding return on his, the consumer's, investment. It will be seen, then, that from a useless camouflage the salesman has become a very important link in the chain of organized society. Specialization—that product of civilization which has taught the individual that he can serve self-interest better and at the same time contribute most to the interests of the community in which he lives, if he will perfect himself in certain definite lines of endeavor—has increased the mutual dependence of individuals. The time was when the individual, or at least the family or tribe, was sufficient unto itself. In those primitive times salesmanship was not an important factor. Each individual was able to discover and solve his own needs. To-day such independence is impossible. Specialization has made individuals so interdependent as to make co-operation essential to existence. Corporate organization has assumed such an important place in present-day economy that corporate methods of handling business are coming to be universally adopted. In former days, sales were perfected through personal acquaintanceship and by general reputation. Modern processes of business have largely eliminated these methods, and to-day every organization of any consequence maintains its scientific purchasing department; likewise the determining factors in purchase are coming to be very generally understood to be cost and quality.

Does Architecture need a salesman? It is evident that society must find means of expression through architecture. It is equally evident that, under modern complex society organization, it is impossible for the individual himself to make that expression or to be informed as to where he may secure assistance in the promulgation of that expression. But the same law which has robbed the individual of the power adequately to express his needs, on account of his having concentrated his entire energy on a single line of special endeavor, has robbed him of the ability to seek out and find the assistance which he needs. He must, therefore, have recourse to the expert service of the salesman whose specialty is carrying information as to product from the producer to the consumer. Now if the public has become so dependent on the services of the salesman as to be unable to provide for its wants without the assistance of the salesman, then if the producer would reach the public, the producer must employ a salesman; and, further, if the product produced is of such character as to be essential to the welfare of the consumer, then it becomes a positive duty to present the product to the favorable consideration of the consumer.

Does Architecure need a salesman? Does society need architecture? Of course society needs architecture, and it needs it worse than ever before in the history of civilization. It needs architecture, and to have adequate architecture, it must make use of specialized individual service; but since it has no means to seek out and find that service, except through the medium of the salesman, it follows that the salesman must be provided, else will society suffer.

Does Architecture need a salesman? Yes, architecture needs a salesman, and it is the duty of architects to provide one. Will architects shirk a plain duty to their fellowman? Mr. Sidney Webb, in an address before the Royal Institute of British Architects, among other things, said, "I hope I am not saying anything too hard, but practically the brain-working professions began as the body servants of the rich, and they have not yet sufficiently realized that it is their duty to have developed out of that to become the servants of the community; they have not yet managed to make their service available for the whole of the community which needs their service." Mr. Webb's clear, succinct statement referring to the beginning and early practice of the professions is a most apt statement of the case as it applies to the early history of the practice of architecture; but it is like-wise true, to a large extent,

with reference to present-day practice. Architects have been slow, in common with members of other professions, to come to a full understanding of their duty to the community. This sloth, in the fullest appreciation of community obligation, while operating against the best interests of the community, has also tended to bring this and the other professions into disrepute. No single class of society can long disregard its plain duty to the community without suffering a lack of that public confidence which is so essential to the highest degree of efficiency in service.

Architects had the confidence and patronage of a considerable clientele which gave them a certain degree of material prosperity; a prosperity which befuddled their reasoning capacity to such an extent as to allow them to come to believe that they were secure in their aloofness from the common need. A false security which they are now beginning to realize through seeing much patronage towards which they had assumed proprietary rights going to others. How have architects acquired these notions, and what has brought about the change, can best be studied by an analysis of the development of Western civilization during the last century.

America has been passing through a more or less chaotic state. Society has not been well balanced; leveling influences have not been fully developed. There has been lack of perspective. These conditions have been fruitful ground for the development of dominant individualism. Enormous individual fortunes have been able to grow in a night. Many have suddenly found themselves possessed of great wealth without the culture essential to its wise use. This lack of culture, on the part of the principal patrons of the professions, has operated against wise choice in the selection of professional assistance. It is not strange that a class which has acquired large wealth without a long, meritorious struggle would be inclined to judge their professional advisers by the same standards that had obtained in their own advance. Men without balancing culture, who had won wealth by sharp tricks or by chance, found no difficulty in convincing themselves that they were made of some superior sort of clay. It was so easy, why any one with brains could be rich, see what I have done; and the converse, any one that is not rich, or does not operate on a large scale, must be lacking in mental capacity. In face of these conditions the so-called professional man said, "What is the use?" "Bluff" is the word. In the presence of such ignorance, how could the architect be expected to obtain recognition of real merit in service. It was sure to be the architect who could show the largest and highest buildings; the biggest office force; and the richest clients who would be preferred with such a clientele. Technically meritorious performance and equipment did not enter into consideration. The rich man wanted an architect as smart as himself, and to determine this, looked to his, the architect's, seeming material prosperity, not to his technical worth. Now, of course, competent architects know that it requires less dexterity in practice to plan skilfully and supervise the erection of a stereotype skyscraper office building than it does to work out correctly the complicated and much involved details of many a building of very inferior magnitude; but neither the rich client nor the public understand this, and for that reason, while willing to pay largely for small service on a big project, were unwilling to pay even a living fee for large and very valuable service on small projects. This attitude on the part of the employing public has tended to divorce the architect from much service where the exercise of his best skill would be of inestimable public value. The factory and the housing problem demand the finest skill of the most diligent and perfectly trained architects; but since the simplest work pays the largest profit, and complex work of small magnitude pays little or no profit, the latter class of work is not sought by the salesman architect, and cannot be assumed by the professional architect, without serious peril to his economic

existence. It may be observed that in the profession of medicine, the physician is able to make his rich patients pay the bills of the poor, and he is able to live on the average. In architectural practice the salesman architect secures all of the highly profitable business, and leaves the professional architect the complex and difficult middle magnitude work where there can be only a mere living fee with no surplus for the service of the poor. Therefore, the poor get no service, for the salesman architect neither has the disposition nor the ability to render such service, and the professional architect, despite willingness, because of economic limitations, is unable to render gratuitous service. Now the principles of economics make it perfectly clear that no service, no matter how desirable, can be rendered to the public without the public paying a living remuneration to those rendering that service, and since no remuneration for any sort of service can be secured from a democratically governed public, except that public is first convinced of the necessity and value of that service, and since it requires the medium of salesmanship to convince the public, then would it not seem that it is a public duty on the part of the architects to employ a salesman in order that the poor, as well as the rich, may have the gospel of the value of architectural service preached unto them.

Looking at this question from another angle: within the last few years material changes have come about in society structure. Socialistic propaganda is beginning to have its effect; the world war, through which we have just passed, was but an echo of these teachings. We say we have fought to make the world safe for democracy. "Down with the Kaiser," does not mean the elimination of the Prussian Royal Household or even of the Prussian Military System—it means, to a considerable extent, the death of dominant individualism and the preeminence of class or vocational socialism, not general socialism. The people are done with kings either of property or nations, and have found that by organizing themselves, so as to have control of an essential commodity, they can force wealth to its knees. Projects of magnitude will no longer depend for execution upon the will of the rich; but the small man, by joining himself with others, will be able to dictate the success or failure of almost any project. From a strictly selfish standpoint, therefore, it behooves the architect to curry favor with collective small folk. Now these small folk are too numerous to be cultivated in the same fashion as was so effective with the rich man. Trained in the school of adversity, these folk have learned to judge men on intrinsic worth. They want to know the possibilities of performance. They are being influenced less and less, as the years go by, by the flummery of social prestige and the glamour of tawdry display. What they want to know is what service they can secure that will be of greatest benefit to them. In place of selecting their professional adviser through personal acquaintanceship, or even directly at all, they will have recourse to the use of some system of collective bargaining. An expert corporate purchasing agent or a collective buyer will be the medium of contract for service, and service will be rated on that person's idea of its economic value. Under these conditions only those who employ the services of the skilled salesman can hope to present adequately the value of professional service. Since no architect, who can show the highest degree of technical skill in his profession, can possibly be possessed of either time or sufficient skill as a salesman to present adequately his case to the expert purchasing agent representative of a class of collective bargainers, it becomes plainly evident that the architects must, eventually, make use of the expert salesman if they would preserve their identity as a class. For in case they do not make use of such salesman service to convincingly present their claims for consideration they must expect the function which they now perform to fall into the hands of other classes less fitted for that service, but classes which are now making the largest use of expert salesmanship, particularly the great contracting and engineering corporations,

which are nothing more nor less than aggregations of brain workers who make use of highly perfected and unusually skilled sales organizations. With longer training and superior attainment, architects need not fear the competition of the so-called engineering and contracting corporation, provided they are willing to lay aside the dignity and prejudice which has grown out of the necessity of generations of individual patronage on the part of the rich and the powerful, and make use of modern sales methods. There should be no confusion in understanding. In no sense is it advocated that the architect himself should become a salesman. Either he would be a very poor salesman or a very poor architect; and since merit in commodity is essential to the exercise of the best skill in salesmanship, the architect must devote his entire energy to perfecting his technical skill in order that the salesman may have a good case to present.

Does Architecture need a salesman? If so, and it seems that the case is pretty well proved, how is this need going to be harmonized with the established ethical codes? Professional codes prescribe advertising in any form as unethical and prejudicial to the best interests of a profession; yet advertising is the handmaiden of the salesman, for commercial experience clearly demonstrates that honest educational advertising is an essential factor in salesmanship. Is it time, then, to do away with established codes, wipe the slate clean, and start over again? Is it expedient for the individual architect to employ advertising in laudation of his individual attainment? It hardly seems so—there were well founded reasons which led originally to the promulgation of the code. These reasons have not been eliminated. All professional service is personal service, and laudatory reference to it by the producer is equivalent to personal boasting, often rated as exagerated egoism, and a practice which is always objectionable. Since it is difficult, if not impossible, to escape this objectionable feature in the presentation of the merits of the service of a single individual, it would appear that the only way open to the accomplishment of desired results is for the profession to present its merits to the public by the employment, through its professional societies and associations, of salesmen or organizations who will present the merits of architecture and the necessity of making use of the assistance of expert practitioners. This method of procedure will, no doubt, necessitate radical changes in architectural practice. Practice will need to be brought up to a uniformly high standard, for if individual merit is to be advocated collectively, then all of the individuals forming the collection must at least have attained minimum standards of qualification for service. The problem of adjusting to new conditions is necessarily complex. It cannot be undertaken hastily; it needs serious thought and constructive criticism.

Conceding that good architecture is essential to the welfare of all, then the public must be made to know what is for their own good and by continuous reminding not allowed to forget. Recent events serve only to prove that it is not sufficient for the public to know its needs, but it must always have those needs forced to its observing attention. Witness the report of the Hughes' Committee on Soldiers' Benefit Insurance, a large percentage of the policies lapsing, not because of lack of funds to pay premiums, nor because of a lack of knowledge as to the value of insurance, but because the men were not continuously followed up and impressed with their duty, as in the case of private insurance where salesmen are paid premiums for keeping policies in force.

These observations force the conclusion that all architects should become members of local and state societies, and either directly or through affiliation with local societies, members and supporters of the American Institute of Architects, and this society should be provided with funds and institute a nation-wide educational campaign for the purpose of acquainting every one with the essential value of architectural service.

HOUSE FOR MRS. CHAS. CLARK, PEBBLE BEACH
BAKEWELL & BROWN, ARCHITECTS

DRAKE HOTEL, CHICAGO
Marshall & Fox, Architects

# The New Drake Hotel Chicago

The rivalry of Chicago with New York in the erection of great hotels has lately been evidenced in two ways—the ordinance amendment just passed abolishing the 200-foot sky line limitation and authorizing a 260-foot height for Loop buildings, and the underwriting by S. W. Straus & Co. of the bonds of The Drake—the largest bond issue ever purchased by a Chicago house dealing in first mortgage securities.

The Drake is located at the intersection of Lake Shore Drive and Michigan Avenue, on the New Boulevard Link—on which the city is expending $15,000,000—overlooking Lake Michigan. It will be an outstanding monument, typifying the Greater Chicago.

This new hotel is under the same executive control and management as The Blackstone, Chicago. Its architects are Messrs. Marshall & Fox, Chicago.

The Drake, like the Blackstone, will set new standards in hotel construction, equipment, operation and refinements. It will again make Chicago the Mecca of architects and hotel men who desire to study the art of hotel construction and operation brought to its modern point of perfection. It will be the haven of travelers who wish to enjoy service of the utmost distinction, in an atmosphere rarely attained in even the world's finest hotels—an atmosphere that has long characterized The Blackstone and will be found in even a more notable degree in The Drake.

The new hotel is twelve stories in height, with two additional stories in the center. It will contain 780 guest rooms. The foundations are constructed to support two additional wings, which, when required, will add more

than 300 rooms. The public rooms are designed on a scale permitting of such an increase without alteration.

The Drake will contain an unusual range of accommodations for traveling business men, tourists and permanent residents. Its facilities for banquets, balls, conventions and other large social functions will be impressively spacious, far surpassing in size and dignity the public rooms of any other hotel in Chicago, if not in America.

To give an appreciative idea of this—the Dining Room, the French Restaurant, the Club Grill and the Avenue of Palms can be thrown together, making a dining room of approximately 25,000 square feet. Into this vast space can also be opened the Ball Room, the Reception Court and the Lounge, making available for a banquet, convention or civic function a total area of nearly one acre.

A feature of extraordinary interest to architects is the main dining room. It directly overlooks Lake Michigan, enjoying one of the finest marine views in the world—including the southern extension of Lincoln Park, Lake Shore Drive, the array of magnificent homes bordering the Drive, the harbor and the shoreline for many miles. On the lake side, the entire length of this room can be thrown open, practically eliminating the northern wall, and the skylights can be shifted in such a way that the whole dining room becomes in summer an open loggia or colonnade. Diners will enjoy the lake air and a view unsurpassed in America for life, beauty, color and interest.

Another exceptional feature consists of two tiers of apartments from the third to the tenth floors, as fine as any in the country. Each will have a reception hall, a living room with fireplace burning real logs, sun porch, dining room, kitchen, service pantry and any number of chambers the resident may desire.

The architecture of the exterior of The Drake is Italian Renaissance, as is the general character of the interior. The ball room is Georgian, the lounge Elizabethan English, and the private dining room English and Colonial.

* * *

## English Architect Uses Airplane in Answering Emergency Call of Client

ENGLAND having achieved the first non-stop flight across the Atlantic ocean, she may now add to her records the first instance where an architect has answered a hurry call by airplane. Recording this interesting and epoch-making event, the Building News of London states:

To Mr. Paul Waterhouse belongs the distinction of being probably the first architect in this country to make the air passage from London across the Channel on a client's behalf. These are still early days for such professional excursions, and, with a view to recording the event, Mr. Waterhouse was asked for brief particulars of the voyage. He replies in the current Journal of the Royal Institute of British Architects: I expect there are other architects who have had occasion to fly on business, so I cannot attach much importance to an event which in any case will shortly become commonplace. But if you really wish to put on record the fact that architects, like other men of business or of art, can enjoy a professional journey overhead, the facts are these: A client wanted me to go to Paris in quick time during the strike, and asked me if I would oblige him by taking the upper route. I very naturally seized the opportunity and went. Hounslow to Le Bourget took 2 hours 55 minutes. The journey (in a De Haviland 16 machine) exceeds for smoothness and tranquility any locomotion I have ever experienced, though, of course, it is noisy, with a perpetual and rather restful noise. I made a half-inch scale section of the cabin en route. I also slept! My impressions of the voyage were, I suppose, the same as those of most "first-flighters," and need not be communicated. What struck me most was the sight of the Channel as looked down upon from 8,000 feet—a sight to which I can attach no adjective but "poetic"—and the ancient majesty of France. Abbeville and Beauvais and the woods and fields between them were things not of today but of the Middle Ages.

# How the Electrical Industry Should Cooperate with the Architect and Home Builder*

By GARNETT YOUNG

AS is well known to all members of the electrical industry, there exists today a very active and growing demand for electrical devices and appliances of varied domestic types and usefulness. This demand has lately far outstripped production, and the shortage is most acute in the case of the labor-saving group. Of course, this is building upon a very solid foundation. What is there is the wide world more desired by the average human being than to escape the hardships of physical labor. The well to do and the wealthy have long been accustomed to accomplish this by the hiring of servants, but in the present domestic problem, such help is scarce indeed, so the obvious alternative is to utilize what labor saving devices may be obtainable, and here we have the first explanation of the phenomenal impetus given of late to the demand for washing machines, ironing machines, dish washers and vacuum cleaners. The increasing publicity has brought these labor savers to the attention of the humbler families, and now many a good housewife, who never aspired to the luxury of a servant, saves both her back and her strength by utilizing electricity's latest reliefs to household drudgery. So no longer can we associate electricity in the home merely with lights, or with the now altogether common articles of convenience, as flat-irons, toasters, percolators, heaters, etc., for the field has broadened again and dire necessity, not mere convenience, is now served by these modern inventions, which, indeed, constitute a boon to the human race.

Occupying such a place in the daily routine of life, it then behooves each of us in our own industry and associated vocations and professions as well, to bring these labor savers and comforts of electricity within reach of the greatest possible number of users. The field has only been scratched (the saturation today is estimated at about 10 per cent) and the demand, heavy as it is now in relation to production, we all must realize is meagre compared with what it will be in the future if intelligent and effective effort is put forth to clear the track of known obstacles.

## OBSTACLES TO PROGRESS

Let us then consider the obstructions. Ask any electrical dealer what limits most his sales of appliances and you will almost always get the same answer, i. e., the premises are not wired to accommodate the articles and, moreover, in the case of washing machines, ironing machines, dish washers, and ranges, no space has been provided in laundry or kitchen in which to locate them. The buyer then faces the expense of alterations and additional wiring which, to the average housewife, seems extravagant and perhaps prohibitive, and which, we must admit, is all out of proportion to what the cost would have been had these simple requirements been provided when the house was built. (The author of this paper has a neighbor who has just installed in his living room two flush wall receptacles to accommodate respectively a piano lamp and a portable lamp, and the cost of the two outlets was $24.70. Most of us can cite cases of this kind, involving much greater and more disproportionate expense, which have come under our observation.) Although the prospective buyer may have been sold on the electrical idea and really wants the device, being willing to pay its purchase price, there is a psychological reaction and revulsion of feeling on the point of paying, in addition, the cost of remedying the result of someone's neglect or oversight that now blocks the way. With a feeling akin to resentment, the prospect may throw up her hands and decide to do without, consoling her-

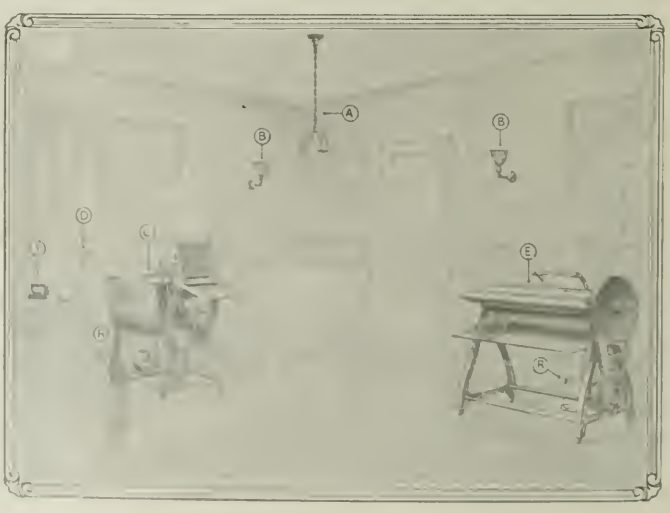
* A paper read before the Pacific Coast Section, N. E. L. A. Convention at Pasadena, May 17 1920.

The hardest work of the house is eliminated by this conveniently designed laundry. The various electric appliances are located just where they are most needed, and handy wall receptacles eliminate the necessity of unscrewing lamps.

Cuts by courtesy of Pettingell-Andrews Company, Boston.

self with the thought that she cannot afford such an outlay. (As a matter of fact, she is deceiving herself because she cannot afford, regardless of the price, to do without a means of saving herself daily labor or providing increased comforts.) You can imagine how this situation is intensified if the prospect is not the owner but merely a tenant of the house and must, therefore, pay for wiring and outlets to be permanently installed in her landlord's premises. There is a point where human nature revolts at imposition. Why, then, we are now entitled to inquire, is not the home, whether house, flat or apartment, properly wired in the first place to avoid such complications? We are coming to that.

Practically all living abodes (houses, flats and apartments) are designed not by the ultimate owner or tenant but by an architect or building contractor, hence these vocations become a link in the chain of our troubles. No sooner do we start out to investigate why the architect and builder slight the electrical re-




(A) Lt. ceiling fixture. (B) Lt. brackets. (C) Electric washing machine. (D) Flush receptacle, double outlet. (E) Electric ironer. (F) Electric iron. (R) Flush receptacle plate. (S) Flush switch.

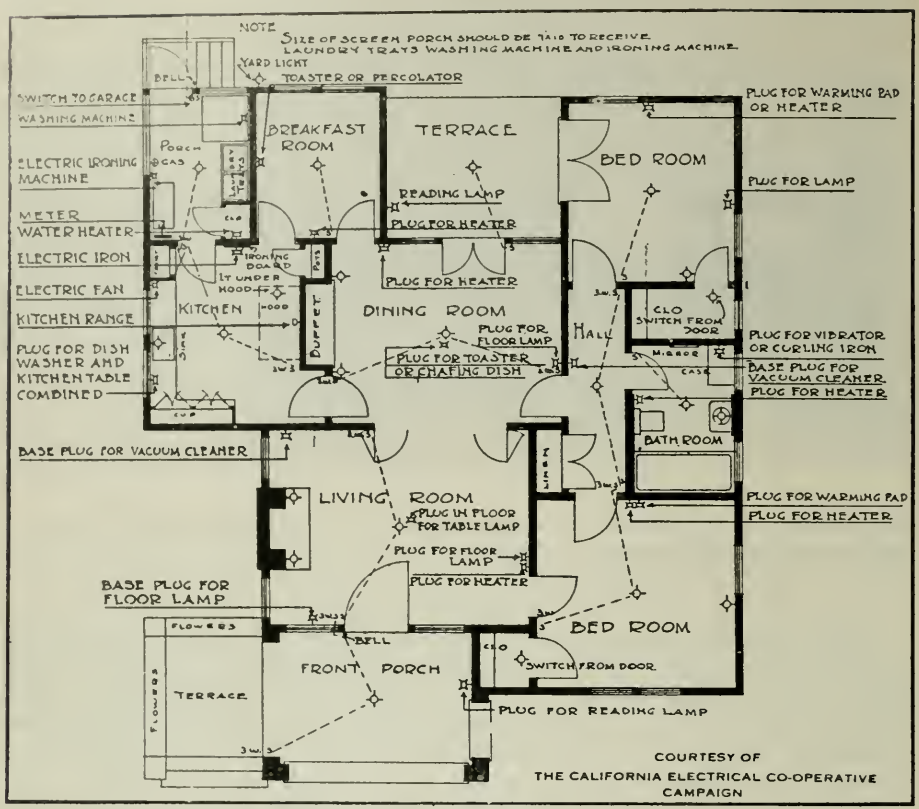
A well lighted kitchen with complete electrical equipment. In addition to the central fixture, wall brackets are provided over the range and sink, while an outlet is furnished for each appliance, as shown in the picture on the right.

quirements of a home than we uncover some bonafide alibis to any charge of neglect brought against them.

### MISUSING THE LAMP SOCKET

The first invasion of the home by electricity, and this was the only domestic development for many years, was in the field of illumination and to this day electric light means a lamp and a socket just as it did in the beginning. Later came switches as a more convenient means of current control and the architect and builder adopted them. The switch, however, did not replace but only supplemented the socket and here you have in combination the two articles associated together in the public mind as the whole answer to the employment of electricity—the socket for connection and the switch for control. But in recent years came the introduction of the electric flat-iron, which was but the forerunner of a great variety of heating and cooking devices, and, notwi hstanding the

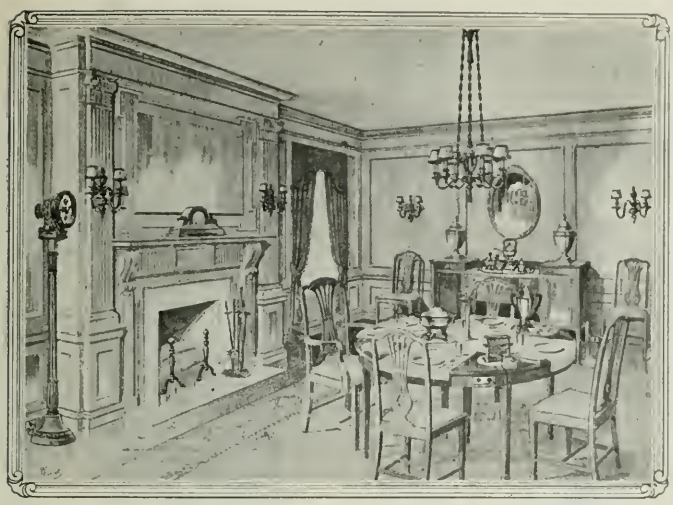
(A) 1-lt. ceiling fixture. (B) 1-lt. brackets. (C) Electric water heater. (D) Flush receptacle, double outlet. (E) Electric range. (F) Oscillating fan. (G) Electric coffee pot. (H) Electric dish washer. (I) Electric iron. (J) Electric coffee grinder. (S) Flush switch. (W) Telechron electric clock.




The properly wired home is fitted with convenience outlets for every kind of electrical appliance, so that it is never necessary to unscrew the lamp from the socket in order to use iron, toaster or heater.

If houses were adequately provided with plugs at the time of building much expense would be saved later and the use of electrical appliances would be greatly increased.

To achieve this it is necessary for the electrical industry to cooperate to the fullest extent with the architect, and see that the electrical idea is considered in the design and building of all homes.

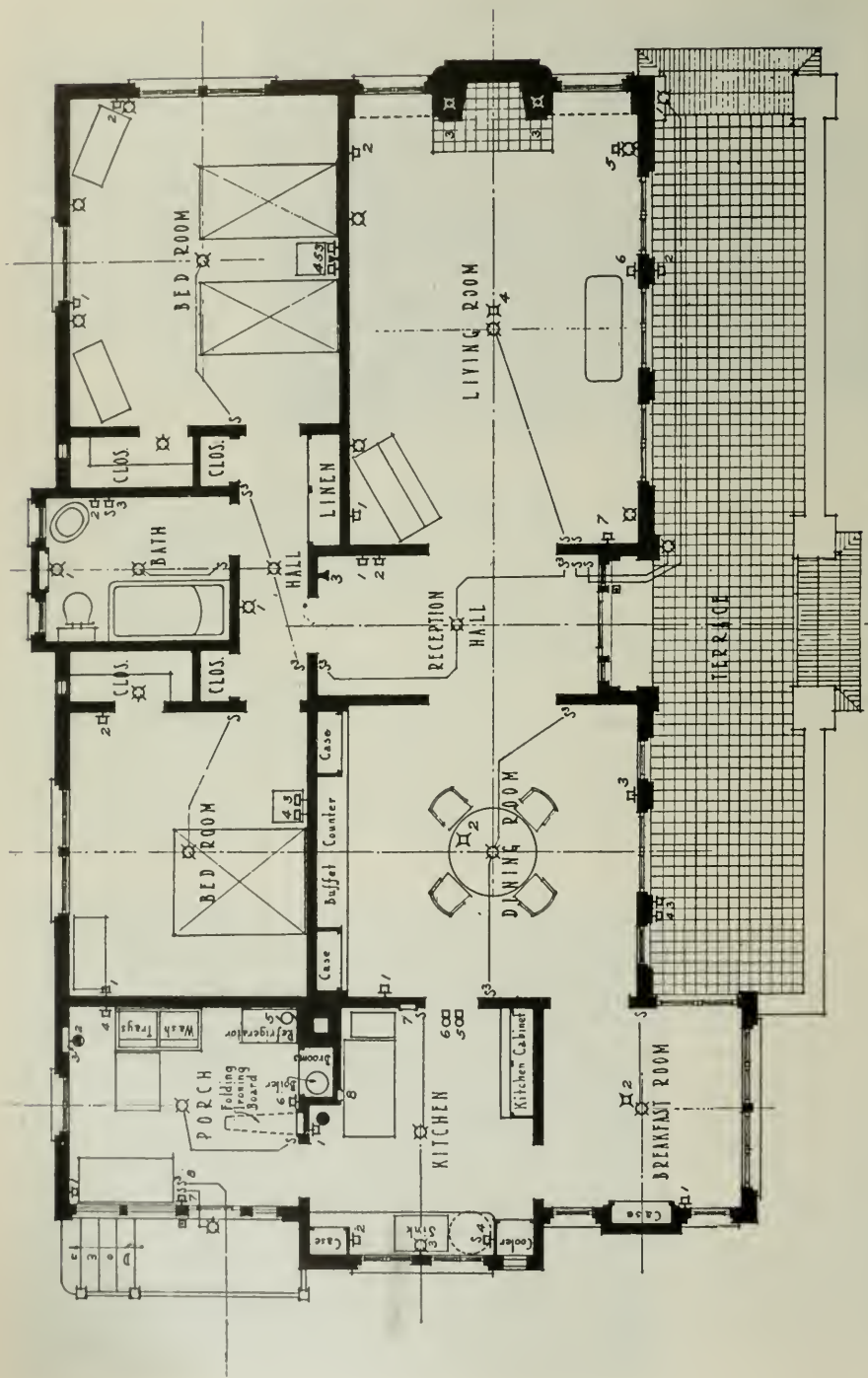


An electrically equipped dining room, with fixtures in keeping with the Georgian architecture, and lamp shades harmonizing with the hangings. The table appliances are made more convenient by the installation of outlets on the table itself, thus doing away with cords dangling from overhead fixtures.

increased wattage involved, the manufacturers designed and exploited these articles as "lamp socket devices," and they were so termed by the jobber, dealer and lighting companies in passing them along to the ultimate consumer so, again, the public had confirmation of its original conviction with the natural result that weighty articles like flat-irons, toasters and percolators dangled from cords which tugged and pulled at their moorings, i. e.—the helpless socket pinioned to the chandelier or wall bracket.

Who then is responsible for the popular dependence upon the socket for double duty—first to accommodate the lamp and, then by removing the latter, to accommodate a utilization device? Who then is to blame if the housewife, with supreme trust in her faithful and versatile socket, expects it to also serve her for motor driven appliances such as vacuum cleaners, washing machines, ironing machines, etc.? Is it not customary for an industry to do its own pioneering along educational lines? Why then blame the architect and builder, who are primarily engaged in the designing and construction of homes, if they

(A) 6-lt. metal chandelier. (B) 2-lt. metal brackets. (C) Chippendale electric tea set. (D) Flush receptacle, double outlet. (E) Electric toaster. (F) Electric fan, mounted on ornamental standard. (G) Electric chafing dish. (H) Electric coffee percolator. (I) Andirons and fire set, matching fixtures. (R) Flush receptacle plate. (R) Flush switch. (W) Telechron electric clock. Electric call buzzer under rug.




AN ELECTRICAL WIRING PLAN FOR A MODERN HOME

Showing the proper wiring for illumination and adequate convenience outlets essential for the efficient use of labor-saving appliances.

# CONVENIENCE OUTLETS

**PORCH (Size 9′ 6″ x 11′)**
1—Outlet for ironing machine motor—up 3′
2—Bell ringing transformer
3—Cut-out and fuse cabinet
4—Outlet for washing machine—up 3′
5—Outlet for refrigerator motor—up 6′
6—Outlet for electric flatiron—up 3′ 6″
7—Outlet for ironing machine heater—up 3′
8—Switch for garage light

**KITCHEN (Size 9′ x 11′ 6″)**
1—Outlet for water heater—up 18″
2—Outlet for utility motor
3—Bracket light over sink
4—Outlet and switch for dishwasher
5—Front door bell
6—Back door buzzer
7—Switch for range—up 4′
8—Range outlet—up 30″

**BATH**
1—Bracket light over mirror
2—Outlet for vibrator, curling iron, hair dryer, or shaving mirror—up 4′
3—Outlet for heater—at base

**BREAKFAST ROOM**
1—Outlet for heater
2—Outlet for toaster, percolator, etc.

**BEDROOM (Rear)**
1—Outlet for dresser lights
2—Outlet for heater, sewing machine, or vacuum cleaner
3—Outlet for reading lamp
4—Outlet for warming pad or milk warmer

**BEDROOM (Front)**
1—Outlet for heater or vacuum cleaner
2—Outlet for curling iron
3—Outlet for warming pad or milk warmer
4—Outlet for reading lamp
5—Telephone outlet—up 12″

**HALL**
1—All night light

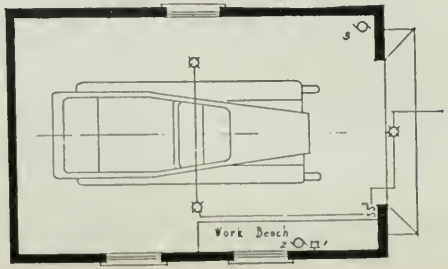
**RECEPTION HALL**
1—Outlet for vacuum cleaner
2—Outlet for portable lamp
3—Telephone outlet—up 12″

**DINING ROOM**
1—Outlet for stand lamp
2—Floor outlet for toaster, percolator, etc.
3—Outlet for heater

**LIVING ROOM**
1—Outlet for piano lamp or phonograph
2—Outlet for stand lamp
3—Outlet for lights on mantel
4—Floor outlet for table lamp
5—Outlet for heater
6—Outlet for table lamp
7—Outlet for vacuum cleaner

**TERRACE**
1—Outlet for illuminated house number
2—Outlet for portable lamp
3—Outlet for toaster, percolator, etc.
4—Outlet for lamp or sewing machine

**GARAGE**
1—Outlet for portable light
2—Outlet for bench motor, etc.
3—Outlet for air compressor




## ILLUMINATION

—Ceiling outlet
—Bracket outlet
S —Single-pole switch
$S^3$ —3-way switch

do not take the initiative in rectifying a blunder of the electrical industry? The most we can reasonably ask or expect is that, at this late date, they join hands with electrical manufacturers, the underwriters, the inspectors and electrical contractors in a conscientious endeavor to wise up the public that sockets, connected as they generally are to light fixture cord or wire, are best suited for lamps only and certainly must be limited to low wattage devices, while modern flush receptacles of the enclosed contact type, fed by No. 14 code wire or larger, are necessary and safer for the heavier current consuming articles and appliances. THE FLUSH WALL RECEPTACLE THEN IS THE ANSWER—for at one and the same time it kills off the nuisance of removing lamps from sockets, the unsightliness of the suspended cord and the danger from overload.

After absorbing this bit of education then the public will be better prepared to understand the necessity for special wiring and connections to feed and control the operation of an electric range and, with a general appreciation of all these points, it is inevitable that living quarters will be electrically wired in the proper style when the premises are under construction.

### APPRECIATING A SITUATION

Surely we cannot assume that the architect or builder will oppose this program if properly placed before them. Never. The architect, artist though he is, will not scorn to give heed to the essential necessities and practical conveniences to which his clients are entitled. The builder, who constructs houses on a commercial scale, has the additional incentive of self-interest which, aside from consideration for his client, will ultimately dictate his attitude. He will quickly learn that houses with incomplete electrical installations or unattractive fixtures will neither sell or lease so easily as houses that are properly equipped. He already appreciates what a garage means to the desirability of a house.

The world was a long, long while in bridging the span from the flickering wax candle to the carbon filament, but once there, and with electricity in the saddle, we have rapidly progressed. Now the people want and demand in their homes not only perfect illumination, artistically provided, but all other available comforts and particularly labor savers in the daily routine of domestic grind, namely—heating, ventilating, cooking, dish-washing, house-cleaning, laundering, etc. We are not picturing a dream of the future but a reality of today. Let any skeptic investigate the facts and learn to his amazement of the mounting millions of dollars invested annually in these goods by householders.

### CO-OPERATION AS THE SOLUTION

If the foregoing may be taken as establishing our premises, that is to say, a need for co-operation between the electrical industry and the allied professions of architect and builder, then let us endeavor to summarize our case and specifically set down the things we want of the architect and builder, to accomplish which we are tendering our offer of co-operation. The objects sought are:

*First.* A complete wiring installation in each new house (and this would include all living abodes) providing, first, for illumination on a liberal and decorative scale, and, second, for the utilization of electrical devices and appliances—the householder being the beneficiary of this foresight at normal cost.

*Second.* The specification and actual use in these wiring installations of materials of known quality, thus insuring to the consumer maximum reliability of service and reflecting credit upon the electrical industry.

In the presentation of this subject we have reached that stage of our discussion where, with our objectives defined, we may proceed to a consideration of the best and most practicable means of attaining same.

Let us first and forthwith dismiss the old idea of each manufacturer going at it single-handed. For years the architect and builder have been besieged by individual manufacturers in the interest of their respective products, but such solicitation could hardly be regarded as co-operation, rather the reflected activities of self-interest demonstrated in the usual commercial style. There is no doubt at all but that this competitive scramble for the good will of the architect and builder has done a lot to acquaint these professions with the individual brands of wiring materials. It is equally certain that this incessant solicitation is largely responsible for the reputation which these professions bear as to being hard to approach or get at.

It is to be hoped that we shall be immediately able to convince Mr. Architect and Mr. Builder that the idea of co-operation *now in our mind* is something entirely different, founded on the constructive and enduring principle of better service to the public comprising the people who are first the clients of the architect or builder and immediately thereafter the patrons of our industry. Moreover, the present appeal is shorn of individual selfishness in that it comes not from the manufacturer alone but from a united industry embracing manufacturer, jobber, contractor-dealer and central stations.

### ATTACKING THE PROBLEM

An outline of a suggested procedure follows:

*First.* We must let the architect and builder know what we want and the suggestion is made that the electrical industry state its case briefly and offer its co-operation through the medium of advertisements placed in the respective magazines or publications of these professions. This would be the opening gun and should not be fired until the rest of the plan is ready to be put into operation.

*Second.* It is suggested that different sets of typical wiring plans be prepared, suitable respectively for one-story residences, two-story residences, and apartments; that these plans be incorporated in a pamphlet with just enough reading matter to make simple explanations. The pamphlet should be in attractive, even artistic form, showing interior views of rooms with everything in the way of furniture and fixtures in good taste, and desirable electrical devices and appliances suitably placed. This idea is illustrated as to dining-room, kitchen and laundry by cuts appearing in this article while similar views of living-room, hall and bedchambers would show floor lamp, table lamps, fan, heaters and vacuum cleaner, etc. On the page opposite to each of these pictures should be a diagram indicating the position of outlets necessary according to the latest good practice. Such a pamphlet should be entirely suitable for an architect to hand over to a client as a basis of study and decision on the electrical requirements of the home. Lending to this purpose, it would be well to briefly emphasize therein two points, namely, the economy to the owner or tenant by having the wiring provided in complete fashion as a part of the original work, together with the unquestionable value to the premises, either for sale or for lease, by the inclusion of such electrical facilities with their strong appeal to every housewife. This pamphlet should be placed in the hands of every architect and builder in the Pacific section with the advice that additional copies may be had for the asking.

*Third.* Field men of ability and training should be employed whose business it would be to make personal calls upon architects and builders and with the above described pamphlet in hand review its picture story and satisfactorily explain any application not clear or not fully accepted. At the same time this expert should acquaint his man with the merits of the present offer of co-opera-

tion from the electrical industry, reaffirming the premises hereinbefore set forth. It is believed that interviews of this character, undertaken by high class men, will lead to a better understanding with results pleasing not only to the architects and builders but to their clients.

*Fourth.* It is recommended by the Commercial Committee, responsible for this paper, that all of the foregoing suggestions be taken in hand and exploited by the California Electrical Co-operative Campaign, which functionary has already demonstrated its ability to cope with such problems. That institution has available part of the machinery for carrying into effect this program and should be equipped with necessary funds to round out its complement for energetically undertaking the work. The Co-operative Campaign is representative of and supported by all branches of the industry, which facts qualify it to best serve as the go-between for the industry and two allies whose thoughtful interest and help we desire to obtain.

Finally, reviewing our recommendations, it is observed that they are devoted to specific ways and means of assisting the architect and builder in holding up their end of the responsibility in the domestic application of electricity, with their clients as the ultimate beneficiary. As the expense of the several activities would be assumed by the industry, it only remains for the architect and builder to accept in good spirit this tender of constructive co-operation.

* * *

## The "Duplex" Apartment

It was pointed out by Mr. Leon C. Weiss, New Orleans architect, some time ago that the word "duplex," used so generally in that city to describe a form of two-apartment within a regular apartment building was a misnomer. The true form of a "duplex" is a two-story apartment within a regular apartment building. That is, when a given apartment is planned to occupy two floors, just as a two-story house is, instead of having its rooms placed all on one floor, it is technically called a duplex, and this is the term applied to it in New York and other cities where such a type exists. In New Orleans the word is used to describe a building having two flats, one above the other.

It is not to be regretted, however, that the word in New Orleans has taken on a new meaning. It describes very well what it is intended to; and it gives a dignified appellation to a type of structure that otherwise would have become known by the less euphonious (and certainly no more correctly descriptive) term "two-family flats." The word duplex is so well ingrained in New Orleans through customary usage that it is apparent that it will become the final term for this kind of apartment, and affords a flexible means of accurately describing somewhat larger apartments as "quadruplex," etc., or, as is already the case, the latter are being called "four-plex." The cost of building has made all houses an impractical rental investment where the number of apartments is less than four or six.—Builders' Review, New Orleans.

* * *

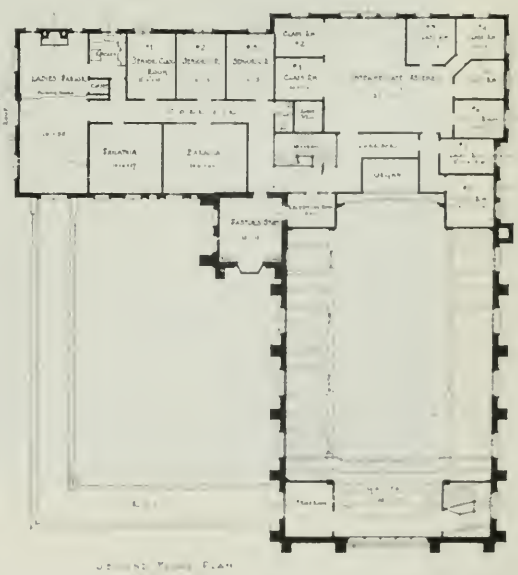
## Notable Numbers Coming

Readers of The Architect and Engineer have a treat in store for them in several future numbers of this magazine that promise to be of exceptional interest. One issue will show the best examples of architecture in Southern California, as judged by a jury of competent professional men. Another number will show the recent work of Mr. Lewis P. Hobart, architect of San Francisco, and other issues will show the work of Messrs. Lawrence and Holford, prominent architects of Portland, Oregon, and Mr. R. A. Herold, architect of Sacramento.

PRESBYTERIAN CHURCH, WILSHIRE DISTRICT, LOS ANGELES
Robert H. Orr, Architect

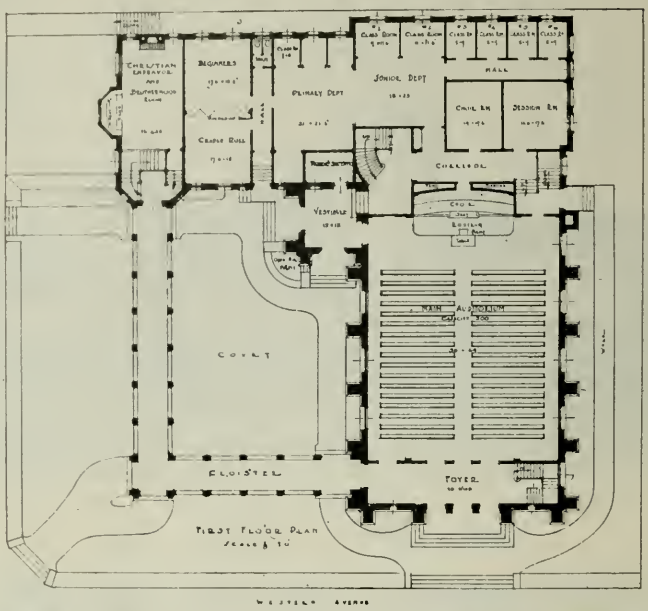
## Two Southern California Churches

MR. ROBERT H. ORR, architect of Los Angeles, has recently been commissioned to design two large church edifices in Southern California. One is for the Wilshire Presbyterian Church and will be built at Third street and Western avenue, Los Angeles, at an estimated cost of $100,000. The other building will be for the Hollywood Christian Church, and will be classic in design, with reinforced concrete and hollow tile walls and stucco exterior. A perspective and plans are shown herewith.

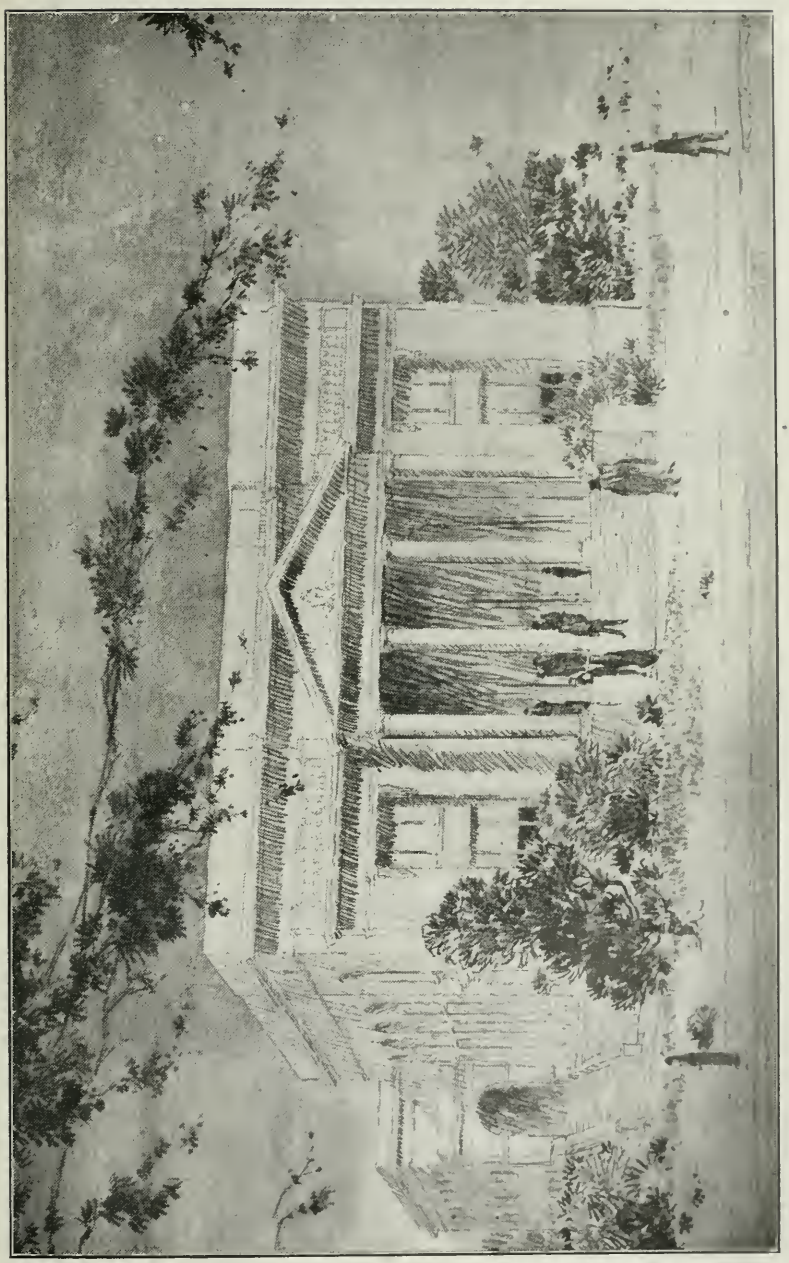


The Wilshire edifice is divided into two distinct units. The Bible school building consists of about 40 rooms, including five departmental rooms, class rooms for individual classes, large social hall, kitchen and dining rooms, forming a religious, educational plant of the finest and most modern design. This building is for the children and young people specially. The church unit of the building consists of auditorium, pastor's study, choir room, church office and session room.

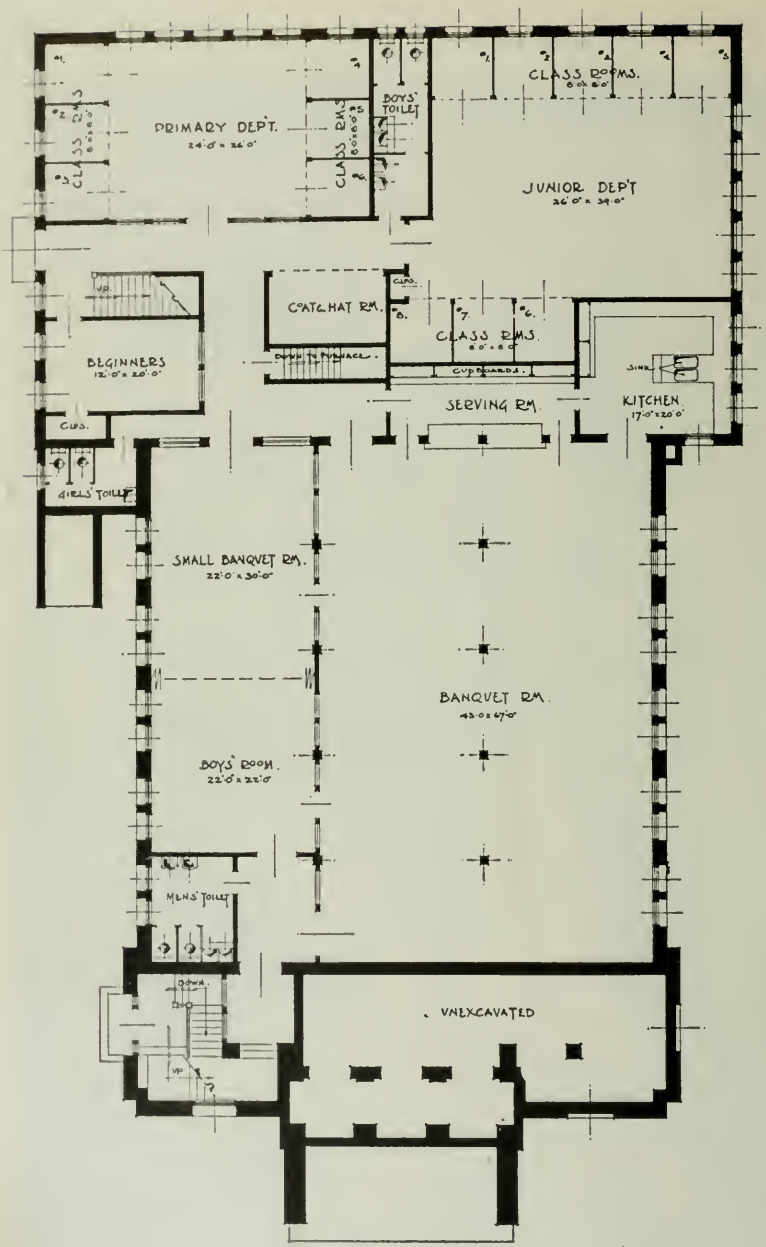
The banquet halls will accommodate at least 350 sittings. There will be a fireplace and cozy corner and provision for fine social life for the church and



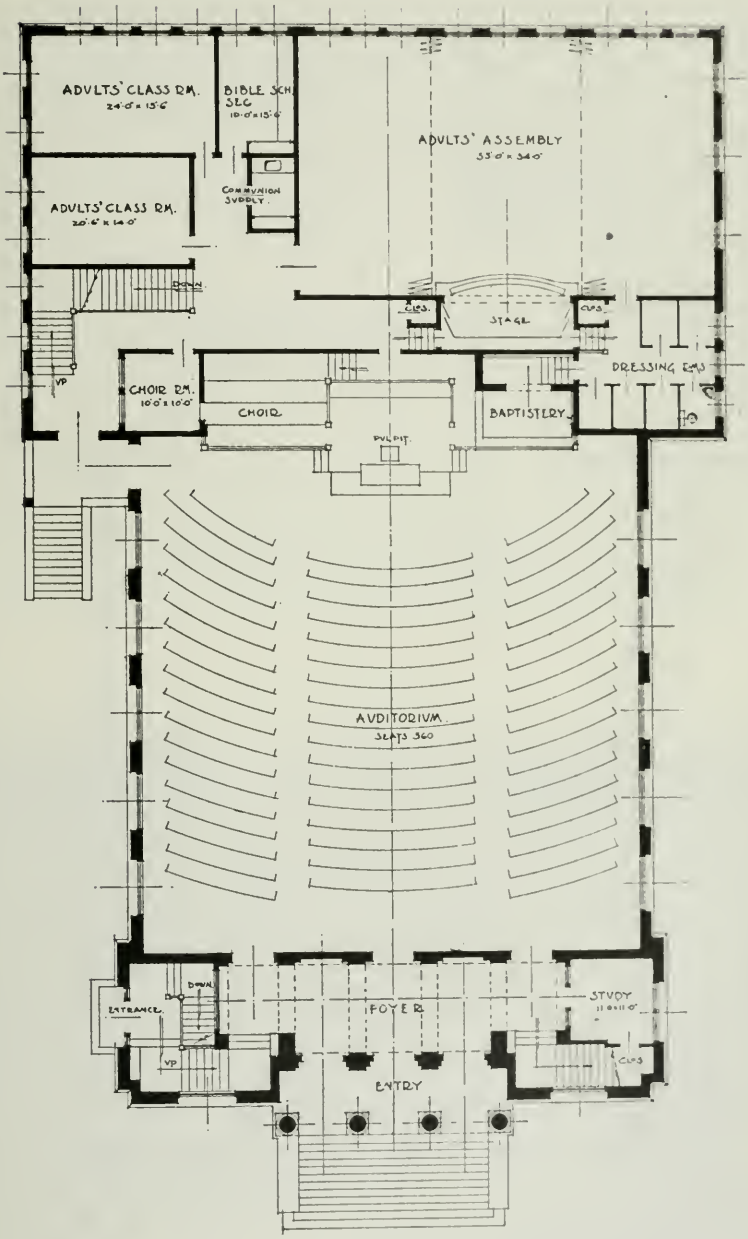

BASEMENT AND FIRST FLOOR PLANS, PRESBYTERIAN CHURCH, WILSHIRE DISTRICT, LOS ANGELES
Robert H. Orr, Architect



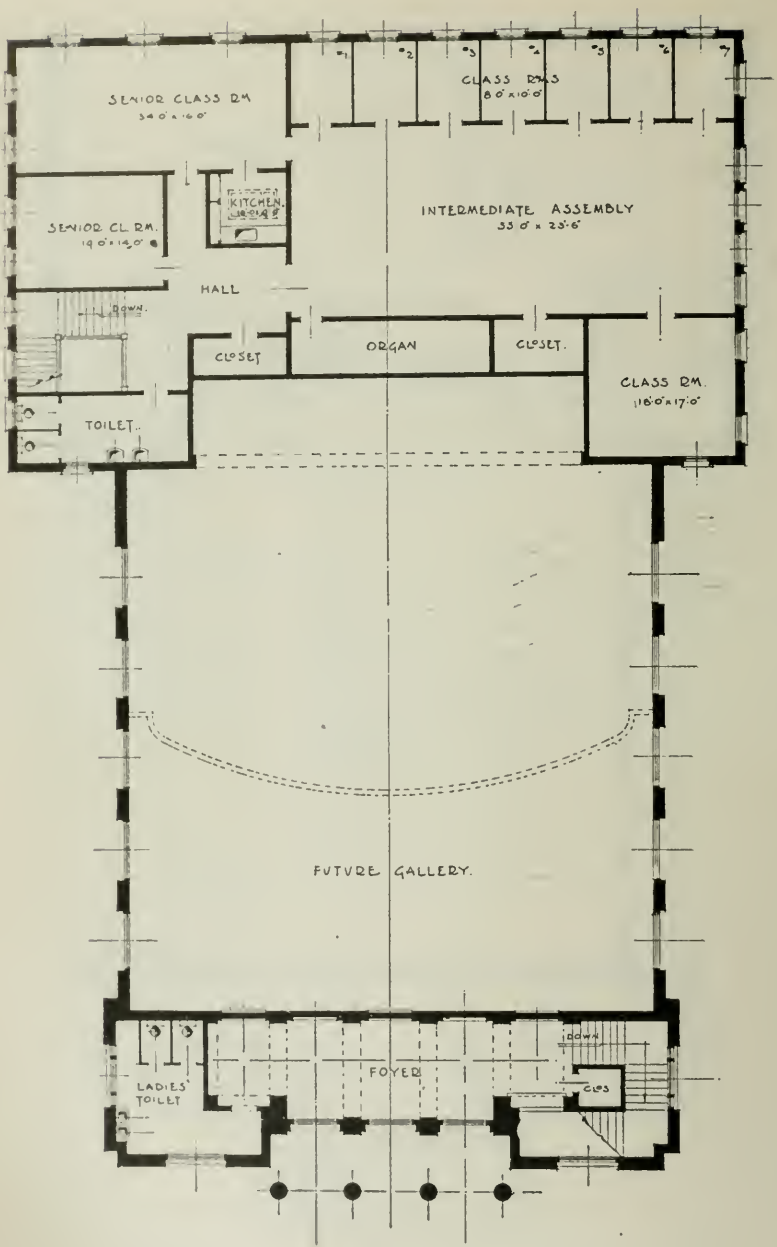
HOLLYWOOD CHRISTIAN CHURCH, LOS ANGELES
ROBERT H. ORR,
ARCHITECT




FIRST FLOOR PLAN
HOLLYWOOD CHRISTIAN CHURCH
ROBERT H. ORR, ARCHITECT




MAIN FLOOR PLAN
HOLLYWOOD CHRISTIAN CHURCH
ROBERT H. ORR. ARCHITECT




BALCONY FLOOR PLAN
HOLLYWOOD CHRISTIAN CHURCH
ROBERT H. ORR, ARCHITECT

neighborhood. There will be accommodations for Boy and Girl Scouts and other clubs for young people.

The main floor contains an auditorium with 600 sittings, the beginner's primary and junior departments of the Sunday school, with separate class rooms, and a Christian Endeavor and Men's Club room. On the main floor also will be an office for the pastor's secretary. A feature of the plan is a cemented patio surrounder by a cloister and an outside pulpit for open air meetings.

The second floor of the Sunday school building contains two ladies' parlors with kitchenette, and the adult, senior and intermediate departments, with rooms for all classes, also the pastor's study, church office and the church gallery seating 100.

## *Portfolio of Views*

*of the*

*Percy T. Morgan House, Los Altos, California, John H. Powers, Architect*

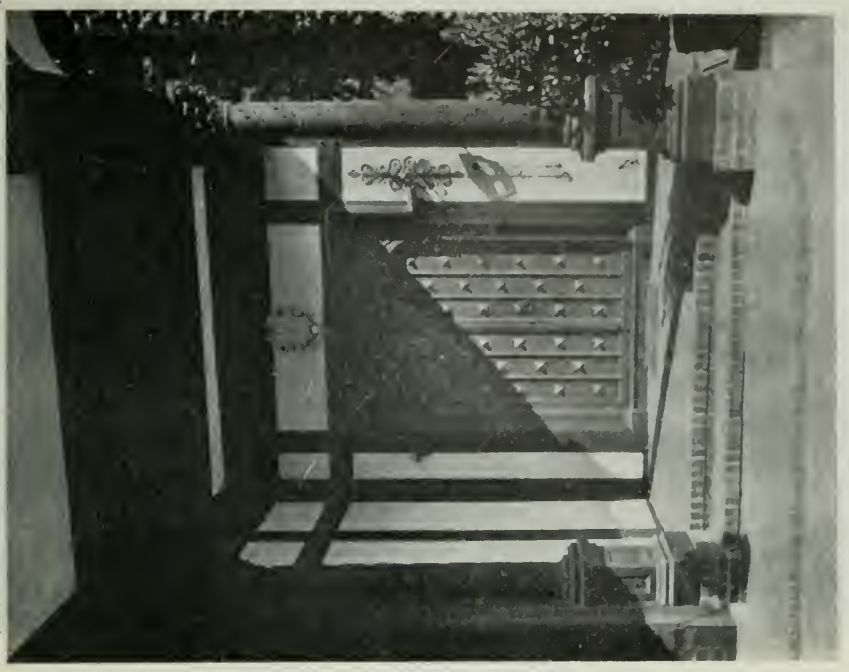
*Also two interiors of the E. C. Hueter House, San Francisco*

*By the same Architect*

COURT VIEW OF MORGAN HOUSE

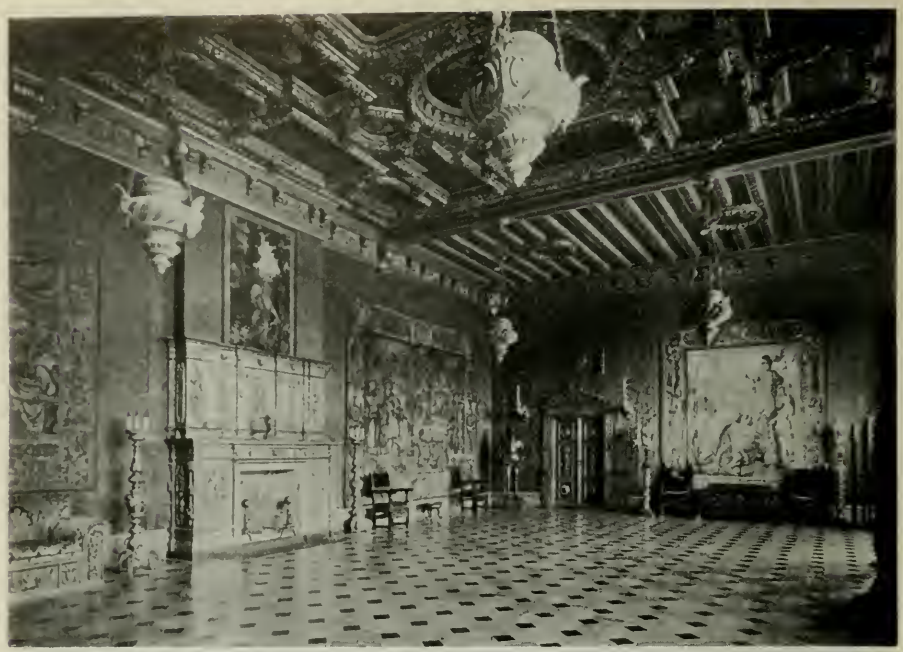
LIVING ROOM, HOUSE OF MR. E. C. HUETER, SAN FRANCISCO

STAIRCASE, HOUSE OF MR. E. C. HUETER, SAN FRANCISCO



ENTRANCE DETAIL, MORGAN HOUSE

GARDEN, MORGAN HOUSE



THE GREAT HALL, MORGAN HOUSE

MAIN STAIR HALL, MORGAN HOUSE

MRS. MORGAN'S CHAMBER

## To Promote Home Building

THE 1920 census will probably show that 60 per cent of the people of the United States are living as tenants, says the president of the F. W. Dodge Co., New York, in a recent bulletin. France is said to have but 20 per cent of tenantry whereas the census of 1890 showed that 52 per cent of the people in the United States were tenants; in 1900 the percentage reached 55 per cent and in 1910, 58 per cent.

The threat of a tenant class does not lie altogether in congested centers but in farming regions of the Middle West and South, where its results may be particularly harmful inasmuch as under American methods of farming, tenantry reduces the fertility of the soil.

It is proposed to extend the principle represented in the Farm Loan Bank Act to the requirement of urban homes and several bills now pending in Congress have this end in view. These bills provide for the lending of money to people who desire to build homes, the money to be supplied through a Federal banking institution especially created for this purpose, the money to be procured by the banks through the public sale of bonds secured by real estate mortgages of the individual borrowers and guaranteed by the building and loan associations or other banking institutions with which the borrowers were doing business. The object of these bills is to provide a maximum loan compatible with security at a minimum interest rate for a long term period, thus freeing the intending home owner from the expense of frequent renewals, commissions and bonuses.

"It is evident," continues the bulletin, "that the housing shortage and high rents are due to the fact that there are not enough buildings being erected. The high cost of buildings is not due to the high cost of raw materials, but to the increased cost of fuel, transportation and labor. The increased cost of labor is due to the general high cost of living. The high cost of living is due to inflation of credit and scarcity of production. The scarcity of production is due to lack of energy of the workers which is due to the lack of proper economic and moral incentive. Legislation promoting wider ownership of property can alone call forth the energy necessary for the maximum of production."

# The Expense of Estimating*

By HENRY K. KOLSMAN, President, Illinois Chapter of the A. I. A., Chicago

ARCHITECTS have realized for a long time that there is a tremendous amount of waste in the present method of making up estimates. The burden is said to be borne by the contractors, but as a matter of fact the contractors as a whole must pass it on to the community, and the architect is justified in co-operating with you to eliminate that waste as soon as possible, on the ground that it would eliminate an unnecessary charge against the community. When the architect fails to take off the quantities for a job before giving out the plans to ten different contractors and asking for bids, the estimating that must be done on that one job is ten times more exacting than would have been necessary, so far as quantity is concerned, had the architect given the contractors a survey of the materials that would be required to be left in place in the building when the building is finished.

Now, the cost of estimating, in our judgment, cannot be entirely eliminated from the contractors' expense. The cost of selling your product, your experience, your ability, must be borne by your trade much the same in contracting as in selling any article of merchandise.

The situation of the buyer in the building field may be summed up as follows: Presumably the owner has gone to the architect and has had the architect map out the plans and specifications for approximately the kinds of material he wants to get. He then hands these plans and specifications to the contractor for his experience in estimating and for putting together a structure so that it can be used efficiently. In that case the owner has set down the kinds of materials that he wants, and has presumably paid for that much of the cost of selling as distinguished from the prices ordinarily employed in the commercial world.

But he still falls a little short in our estimation. He gives the contractor plans and specifications laid out in the general way, but he might have gone into the estimating end of the matter and given the general contractor a quantity survey of the plans and specifications, which would make it much easier and less hazardous.

*Conclusions of Joint Conference on Payment for Estimating.*—It is with that thought that the Joint Conference on Payment for Estimating Construction Work, which is composed of a committee of your organization, one from the American Institute of Architects, and one from Engineering Council, formulated the resolutions that I shall now take up. Two meetings were held by the Conference, at which the subject of the expense of estimating was discussed at great length. The first section of the resolutions adopted is as follows:

> Whereas, There is great economic waste in the present usual methods of individual estimating of the same quantities by several different bidders on the same project; therefore, be it
>
> Resolved, That the following are the conclusions of this conference:
>
> First, That any system of duplication of effort in estimating, wherein each bidder separately estimates the quantities, should be condemned.

There are many reasons, which you know better than I, why such methods of estimating should be condemned. But what comes to my mind just now as most important is that the largest part of the great variation in bids often found on a structure is not due to the difference in prices that contractors place on materials, but instead is due to the variation in the estimates of the quantity of material and labor that would be necessary to carry out those plans and specifications.

*From an address presented Feb. 19 before the Building Contractors' Division of the National Conference on Construction of the Associated General Contractors.

Then, if there is an average of ten bidders on one job, or if every contractor on the average must bid on ten jobs to get one, manifestly there is ten times as much effort expended as is necessary. It is also manifest from our point of view that if the quantities for the job were taken off in a systematic manner that would be by necessity universally adopted by the contractors, and if the quantities were taken off under the supervision of the architect who makes the tracings and the specifications, the quantities then would be more apt to correspond with what is expected by the architect than if they were taken up by some individual who never saw the tracings and specifications before.

If it is specified that all shall bid on this bill of quantities, or on this quantity survey and none other, they all have at least one common thing fixed. Under the present method, each bidder may submit a proposal on a different schedule, based upon the way in which his estimates have interpreted the plans and specifications, and upon the care taken to include everything called for.

*Quantity Survey and Additional Payment for Estimating.*—The second section of the resolutions is as follows:

> All competitive bids should be based upon a detailed schedule of quantities prepared from a survey of the plans and specifications, and submitted therewith, the costs of the preparation of such survey of quantities to be borne by the owner.

The only comment that I have to make on this is that we all agree that if the buyer, the owner, is going to go to the trouble of having the plans and specifications prepared, it is logical that he should go further and get a comprehensive estimate for the bill of material or quantity survey that could be easily priced.

In considering the value of a quantity survey, we realize that it will be necessary gradually to work out a standard practice. Quantities must be so listed that the bidder, when he uses them in preparing his bid, along with the plans and specifications, can understand just what will be needed, and can judge accurately as to the labor cost of the work.

The third part of the resolution bears upon payment for pricing the work:

> While the owner should furnish a quantity survey as the basis of bids and contracts, and should submit them with the plans and specifications, and should pay for the same amounts to the bidder, the bidder should make no charge to the owner for submitting proposals based on said plans, specifications and quantity survey.

While the owner should furnish a quantity survey, as a basis of bids to contractors, we do not feel that, in addition to this, he should pay each contractor for pricing the quantities and for the various items of overhead that bidding on projects entails.

There is undoubtedly an economic gain resulting from the preparation of a quantity survey by only one individual or institution instead of by five or ten as the case may be, provided these quantities are guaranteed to be correct enough for bidding purposes. Even if the quantity survey says that there is less material required by the plans and specifications than will be necessary, so long as it affords an equitable basis for building, it has served its purpose in a large measure. Adjustment of the contract price may be made to correspond to actual conditions, either before the contract is signed or as the work proceeds.

But when the owner and buyer has gone that far, he says, "This will do for the basis of bidding; here is something that you can give us your prices on. But we feel we ought not to go further as buyer, and so we will not pay you for putting prices on these quantities."

In other words, if we were attempting to say that the owner should pay a contractor for his trouble in figuring up his prices and bidding, we would be going too far. The accepted principle in commercialism is that the cost of selling a product be added to the price charged the buyer, but only in case he does actually buy. Our first step is to say, then, that bidders should make

no charge to the owner for submitting prices on his building project, provided the quantities are furnished.

In the last section of the resolutions, an alternative is proposed whereby each contractor would receive pay for his estimate if he had to prepare his own quantities.

In general, competitive bids should not be invited nor submitted on projects, the plans and specifications for which are not accompanied by a quantity survey, unless the owner agrees to pay a predetermined fee to each bidder for preparing the quantities and submitting an estimate.

This clause, I think, was finally determined upon as a suggestion of co-operation between the builders and architects by way of helping to get the thing established.

Now, you see, if we could agree upon these principles, and have it recognized that they are just and fair to the contractor and the architect, and have them widely known, we could accustom those interested to the idea that unless the plans and specifications are complete, and include a quantity survey, they are not yet ready for bids. This would mean a long step towards reducing some of the errors in bidding and the estimating expense under the present method of bidding.

* * *

# An Eastern Architect's Impressions of Los Angeles

By GEO. D. HALL*

TWO months is too short a time to form definite convictions as to the functioning of a city as large as Los Angeles, which is growing by leaps and bounds. Even in cities that grow normally, the most intelligent City Planning Commissions, and the most far sighted Governmental legislation, are hard pressed to guide that growth along the lines of the cities' best welfare. From what I hear and can see, Los Angeles has long needed such guidance, and it is to be hoped the Commission soon to be appointed will solve many of the big problems of today, and lay down on fundamental lines the answer for an intelligent and happy growth of the future.

Los Angeles should be viewed as a Metropolitan District, such as is in existence for Boston and its neighboring towns, with a comprehensive boulevard system and chain of parks.

Visitors are greatly impressed by the city's wonderful roads, superb views, and delightful climate, all of which impels long automobile trips and tends to the building up of the outlying districts even beyond the present city limits. All this suggests the need of a comprehensive Metropolitan District, whereby the benefits and costs may be shared throughout the whole district.

To one, like myself, considering the purchase of a home in Los Angeles, a difficult problem is presented in attempting to analyze localities in which one may feel reasonably sure of the good neighborhood continuing, since there seems to be no zoning restrictions.

The "Profession" of Landscape Architecture is less understood in the West than in the East. Experienced landscape architects, such as are accepted into membership in the American Society of Landscape Architects, are much more than Landscape Gardeners, or Nurserymen who call themselves Landscape Architects, and in the East the great majority of Architects (even those who have studied Landscape Design) appreciate the need of a close association, before any buildings are undertaken, with a competent professional Landscape Architect. This is because they acknowledge that special training and experience in the study of Landscape Archeitecture is essential to the best planning of ground development. In the West, today, this cooperation be-

* Member of the firm of Cook and Hall, Landscape Architects, 529 I. W. Hellman Bldg., Los Angeles, California a nd Fellow Pacific Coast Chapter American Society of Landscape Architects.

tween Architects and professional Landscape Architects is apparently lacking, if one may judge from the design and ground development of many fine estates, public institutions, and subdivisions for homes.

One is greatly impressed by the wealth in planting material and the luxurious growths in California. But it should be appreciated that a surplus of planting cannot conceal a poor composition of design, and can only partially help out an unhappily located system of drives or an unfortunate piece of grading. The Architects of the West deserve hearty congratulations on the houses one sees, but it would be interesting to know if the Architects themselves, who made the ground plans, are satisfied with the results, as also the cost of development.

The opportunity for the professional Landscape Architect (who takes no commissions on plants, labor or materials that go into the development called for by his plans) is very much curtailed unless the Architects recognize a division between buildings and ground development work, and unless they call upon, or advise their clients to call upon, the experienced Landscape Architect, to cooperate with them in development work.

Without this spirit of cooperation between the two professions, it is probable that the professional Landscape Architect must do, as the commercialized Landscape Architect has already done in many cases, go in for architecture. This it seems to me would be a great detriment to both professions, would create an unfortunate competition, and would lead to results that could not be the best expression of Architecture and Landscape Design.

In the East, the American Institute of Architects and the American Society of Landscape Architects are appreciating the need of standing together and fighting for a proper code of ethics, acknowledging that the two professions are distinct and supplementary to each other.

It would seem to me that the time is now ripe for the professional architects and the professional Landscape Architects here in the West to get together on the basis of mutual help, and to take such steps as may be necessary to lay before the public such information of educational value as will lead to a better understanding by the public of what professional practice and ethics really means—namely honest service and good results at commensurate costs.

*
* *

## Lumber Prices in Germany

THAT the prices of wood have risen unreasonably in Germany was the recent statement of the Minister of Agriculture in Berlin, addressing a session of the Prussian State Assembly concerning conditions in the lumber and wood manufacturing industry. According to press reports, tremendous sums have been paid at public sales not only for the State and community forest products, but also at auctions which took place in private woods. As early as last August, the Central Government issued orders to the different State governments that home industries should be first protected in all wood sales. But these Government measures, taken in favor of the general consumer of wooden articles, seem to have had little effect. By selling the wood at a cheaper price to the wood-working industry, the State has encountered some loss, notwithstanding which the prices of wood products have increased steadily, as is seen in the constantly rising prices of furniture. In addition to this, a constant export of wood is taking place into foreign countries, in spite of the export prohibition. In consequence of this, more severe restrictions have been put in force and it is possible that the wood trade will be licensed for the purpose of putting an end to the wild speculation.

# Lumber High? We'll Say So

By F. W. ARMSTRONG, in the Improvement Bulletin.

AFTER putting this query to lumbermen and others interested in the building industry for the past few months, and particularly at a convention in Indianapolis recently, we find there are four causes that are directly responsible for the increase in the cost of lumber, and former Senator Albert J. Beveridge summed the matter up with the following words: "There is three times the demand for lumber at the present time than ever existed before and only one-third of the timber standing that previously existed."

The four reasons given by most of those interviewed was the Income Tax Law of 1919 and 1920; Prohibition; Government Control of Railroads and the General Increase in the Cost of Living.

Few mills are capitalized sufficiently, which means that a large portion of their income or income on investment is paid to the government in the form of Income Tax. In order that sufficient revenue will be derived from the investment, it is necessary to increase the cost of lumber, if two-thirds of the amount is paid to the government, the remaining one-third must equal the total income of the past year. Furthermore, the Income Tax is responsible for the small cut of timber, in view of the unprecedented demand existing today. If an owner has a ten-year cut ahead convenient to the location of his mill, there is no incentive to cut this timber at once, as a large portion of the revenue which he would receive must be paid to the government in the shape of excess profits tax. Therefore, he will have considerably more income by cutting one-tenth of the timber each year and paying only on the normal income instead of that plus the excess profits tax.

Prohibition is also responsible for the increased cost of lumber. In past years the lumberjack would work until he had accumulated a little money and make a trip to the first town or village, remaining two or three days spending all his money in drink or leave sooner if jackrolled, and go back at once to the woods, being absent only two or three days. At the present time, and many of the old woodsmen are disappearing, the men in the woods do any kind of work, and at payday leave, but instead of going to a nearby town will go to the nearest metropolis and loaf as long as their money lasts, which is usually several weeks, and it may be a month before he finally returns to the camp. This means a large turn-over of labor and every business man is familiar with the cost of doing business when he has a high percentage of labor turn-over, and the only place this expensive item of labor can be charged is directly to the cost of lumber.

Government control of railroads has also helped to increase the cost of lumber, but there will probably be some relief here, now that the railroads have returned to private ownership. In the woods the government made expensive changes for the use of equipment and the laying of spur track. This is a considerable item to the one cutting the timber who does not own his own railroad. The unequal distribution of cars and the many embargoes that have been placed on lumber for seemingly more necessary loading has also worked a hardship on the mill owner and oftentimes his crew has been laid off pending the arrival of cars.

The increased cost of living in all lines has been an important factor in the increase of the cost of lumber. First, it costs considerable more to build the camp. No longer will the woodsman sleep two in a bunk with unsanitary conditions. The camp of today is nearly as complete as a first-class hotel. The increased cost of travel is paid by the lumberman in transporting his employees the same as anyone else. The high cost of food has hit the lumber camp as

hard as the individual consumer and more so, inasmuch as the men of today are fed much better and with a greater variety at considerable more expense than they were years ago when given no variety and an inferior quality of food. The question of tools and equipment is also important. Everyone is familiar with the increased cost of tools. There is considerable breakage of tools and many are lost. Horses are scarce and grain is high. In fact many camps are now using tractors to haul their logs. When it is necessary to haul logs by rail to the mill, there have been sharp increases in freight rates, which are charged to the lumber, and at the mill every branch of labor has increased in some instances more than 100 per cent and it is no longer possible to get a man to work in the woods for $15 to $30 a month.

Another important factor is the using up of the old forests. Take the district adjacent to Duluth. For years it has been practical to send timber down the Cloquet river direct to the mills at Cloquet, but recently we read in the press whereby in order to perpetuate their mills and keep up the town of Cloquet the lumber interests there had purchased timber in Lake and Cook counties. This necessitates a haul of 100 miles or more in instances, which involves a terrific expense, and in the old days the lumber man forgot to charge off depreciation on his property when figuring the cost of his lumber, and, therefore, when he had cut all the timber possible, he found an idle mill on his hands, the cost of which had to come out of his profits.

From the above paragraphs, as well as the demands made by the government for lumber for army and navy purposes and the civilized world trying to catch up on a house-building program which has been neglected from three to five years, anyone will readily see how the price of lumber has advanced, and furthermore, should the United States try to fill the demands of foreign countries and export their lumber to those countries it will add greatly to the cost of lumber to the domestic consumer, as it will still further diminish our supply.

* * *

Mr. H. A. Sullwold, an architect of St. Paul, Minn., writing of lumber prices, says:

In the daily papers recently there was an announcement of a cut of 10 to 30 per cent in lumber prices, thereby giving the impression that the small house builder might be able to operate to better advantage. For the benefit of your readers, I should like to give comparative costs from a contractor's figures on a house which was actually built in 1915, also one built in 1919, and figures taken a few weeks ago.

The following figures were for general contract only, not including plumbing, heating and wiring:

| 1915 | Oct., 1919 | Feb. 20, 1920 |
|---|---|---|
| $4,090 | $9,200 | $11,800 |
| 4,259 | 9,350 | 12,103 |
| 4,265 | | 12,950 |

This would indicate that present costs are about 200 per cent higher than in 1915. The lumber and mill figures for the above house this year were about $5,000 or $1,000 more than the total cost of the house in 1915.

It is my opinion that the lumber companies are beginning to realize the seriousness of this condition, and while they guarantee no price change before June first, all indications point to a still further drop in lumber prices, brought about by greatly decreased demand.

* * *

Many men refuse to build now because of a belief that the cost of building materials will show a marked decline within a few years. It is not probable that there will be any sort of a landslide in building costs, although it is quite prob-

able that costs will be shaded down from present levels. There are many good reasons why there will not be any pronounced drop in prices. But if tax exemptions were to be granted to new dwellings for a reasonable number of years, the prospective home owner could look with equanimity on the prospect of lowered costs. Even though costs should drop abruptly the man who had built or bought a house constructed under the tax-exempt plan, could still regard his investment as a profitable one. Of course, there would be no exemption for special improvements increasing the value of the property.

Another point: Tax exemption for new houses would tend to equalize rental conditions between the older houses and those built today, without working any hardship on the owner of the older houses. That seems paradoxical, but is it? Landlords generally have advanced rentals. Part of this advance is based on increased cost of maintenance. But most of it is based on increased "replacement value." "It is true," argues the landlord, with justice, "that I am getting a big return on my investment of ten or a dozen years ago—if we base the return on dollar values as they were at the time of construction. But dollar values have shrunken. They are worth only about half as much as they were when I built that house, measured by what they will buy for me. If I do not raise my rentals more than enough to cover the increased taxes and cost of upkeep, I will get only about 50 per cent as much return out of my property as I got before the Great War came along and upset all our preconceived notions of what a dollar was worth. So I am justified in basing the return on my building on replacement value, rather than on first cost."

Absolutely true. But if the house or the duplex should burn, the replacement cost would in effect be considerably lowered under a tax exemption law, which would have a tendency to lessen the high-rental evil all along the line.

New houses represent created wealth. When they are attractive and well built they are an asset to any community. The people as a whole could well afford to lift the tax burden for a few years to encourage construction of homes. Dwellings must be built or the entire community must suffer. Hundreds of our Northwestern towns—big and little—are suffering from the throttling effect of insufficient housing facilities. In the Orient they have skillful horticulturists who delight in producing miniature trees—oaks, elms, maples—by cutting the roots and by bandaging the trunks of the young trees to lessen the flow of sap. They grow to maturity picturesque, perhaps, but shrunken, distorted, malformed—these ancient dwarf trees of Japan—denied their natural development.

A chronic lack of sufficient houses would have much the same effect. It would produce over-crowding, the evils of the old-time tenements. It would restrict and retard the normal growth of any town to which it was applied, would stunt the business life and the natural development. Any measure that may be taken to permit the natural unhindered development and growth of any community is a direct benefit to each member of the community, and to remove the tax burden on new homes as an incentive to house construction would directly benefit, not only the owners of the tax-exempted houses, but the other citizens of the community. In any event, if no encouragenent were offered a prospective builder, and the houses were not built, the owners of other realty would have to bear all the tax burden, with no relief in sight.—Improvement Bulletin.

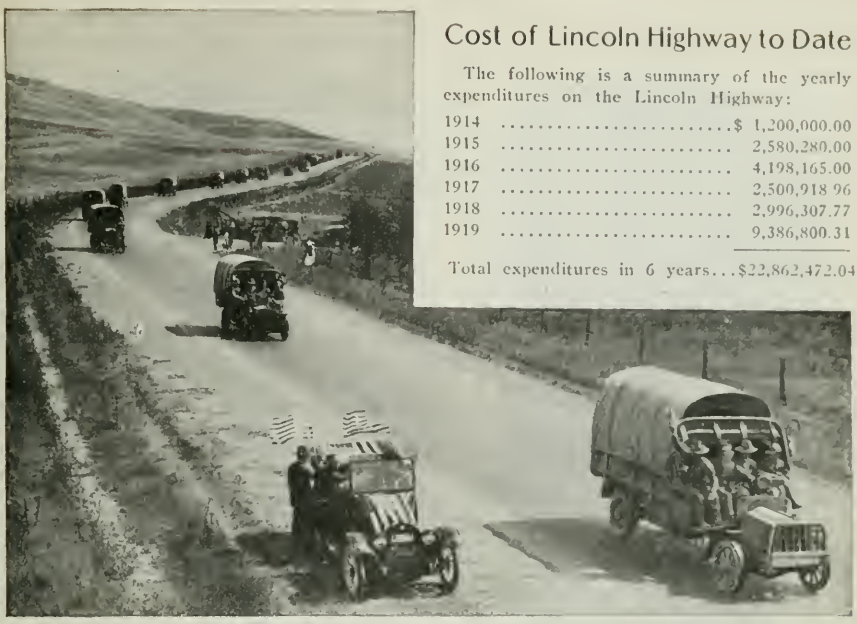
* * *

## Something for the Architect to Tell the Public

You can't expect to get quality in buildings for a low price any more than you can expect to get an orchestra seat at a balcony price.

Some things are reasonable at a dollar, while others are costly at fifty cents.

Price is simply an admittance ticket to an expected service. If you pay for it, you get it; if you don't pay for it, you don't get it.—Jarvis.



## Cost of Lincoln Highway to Date

The following is a summary of the yearly expenditures on the Lincoln Highway:

| | |
|---|---|
| 1914 | $ 1,200,000.00 |
| 1915 | 2,580,280.00 |
| 1916 | 4,198,165.00 |
| 1917 | 2,500,918.96 |
| 1918 | 2,996,307.77 |
| 1919 | 9,386,800.31 |
| Total expenditures in 6 years | $22,862,472.04 |

Visualizing the prediction of future freight traffic on the Lincoln Way, the First Transcontinental Army Convoy is shown making fast time on the last leg of its transcontinental journey, over the Lincoln Highway in Dublin Canyon, near Hayward, California.

# Progress of the Lincoln Highway

SEVEN years ago the idea of a transcontinental highway connecting New York with San Francisco, improved throughout its length and forming a backbone for a great national system of arterial roads, was only a dream in the minds of a few. Who will deny today that the accomplishment of this dream of a great memorial route stretching from ocean-to-ocean—The Lincoln Highway—is absolutely assured of early realization?

The opening up of a main line interstate highway from the Atlantic to the Pacific is an accomplished fact. Its continued improvement to higher and higher standards is certain. As a memorial road it is on the map of the United States no less certainly than the Mississippi River.

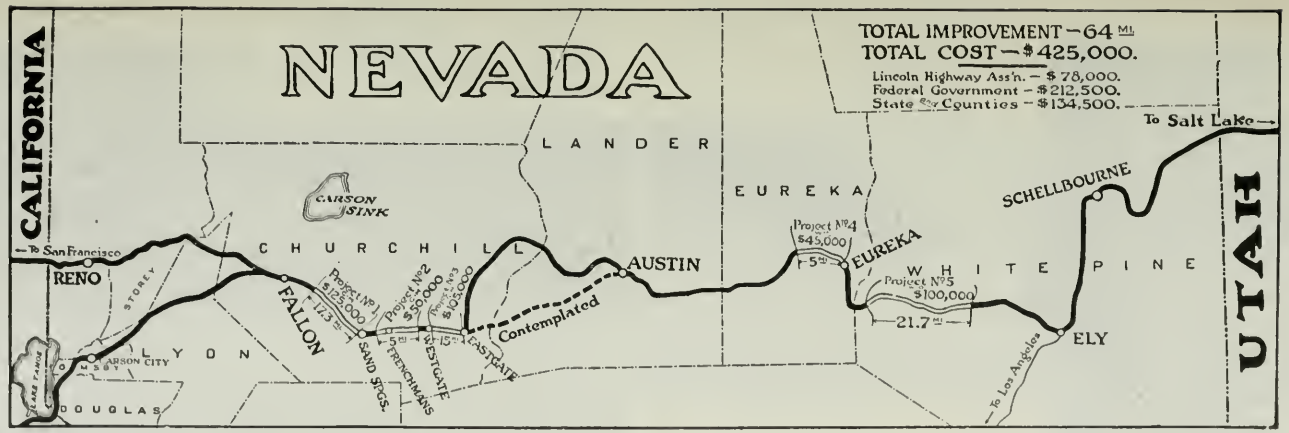
In 1914, one year after the proclamation of the Lincoln Highway, Dr. Frank Crane, the well known publicist of New York, wrote in his syndicated publications: "The Lincoln Highway is original. It breathes the twentieth century. It is an inspiration. In centuries to come it will be adorned as was the Appian Way with landmarks, statuary, homes, inns, a vast chain of the splendid marks of man. It would be the path of progress, the river course of humanity, part of the golden girdle of the earth.

"When it is completed along it the traveler can pass over a perfect roadbed, under over-arching trees, by beautiful temples, fountains, arches and statues, across the plains, by the side of winding streams, along great rivers, over artistic bridges, thru mountain passes, deserts and green valleys, from ocean to ocean,"

The past seven years have been filled with endeavor toward that first end which is so nearly accomplished—the securing of national interest and

# A BASIC SYSTEM OF ARTERIAL FEDERAL HIGHWAYS

This map is presented by the Lincoln Highway Association merely to indicate how 25,000 miles of Federal Highways, one per cent of our total American highway mileage, would link up the important centers and ports of the Nation. The Townsend Highway Bill would provide a federal transportation system of Government highways of really national importance from a commercial and strategic standpoint. To this main arterial system would be connected the various State highways with their innumerable county branches. The final, actual Federal Highway System would be selected by the Federal Highway Commission authorized by the bill. It could be built in five years with the $425,000,000 appropriated in the pending legislation.




Strip map of Central Nevada. Note shortening, straightening and improvement of the highway. The dotted line marked "contemplated" shows a new survey, eliminating a bad pass and resulting in a shortening of 19 miles.

Messrs. A. F. Bement and H. C. Ostermann of the Lincoln Highway Association inspecting one of the permanent steel signs which direct travel along the Lincoln Way across the wastes of Central Nevada and point the path to the Pacific.

A glimpse of the entrancing scenery along the Lincoln Way in Northern California. Lake Tahoe is named in memory of the pioneers of the Donner party.

A party of tourists following the ungraveled grade across the Great Salt Lake Desert.

Freight Transportation across Wyoming. The first Transcontinental Army Convoy crossing the Continental Divide on the Lincoln Way.

Lincoln Highway west of Salt Lake City.

Stretch of concrete highway on the Lincoln Way, Altamont Pass, Alameda county, California.

attention and official cooperation to the end of providing an open road from coast to coast.

Now, it is not too much of a dream to look ahead twenty years and to provide on the Lincoln Way a section of road presenting in tangible form the crystallized opinion of our foremost highway engineers, a section which will present no compromise with the best which expert consideration determines is wise and practical and adequate and safe.

A practical ideal is now to be visualized on the Lincoln Way. It is another educational undertaking on the part of America's foremost highway organization.

It will mark an epoch in the history of our road building.

* * *

By far the greater portion of the Association's financial support during the nearly seven years of its work has come from a restricted circle of about fifteen different men and corporations, and practically seventy-five per cent of it has come from a group of less than fifteen.

It costs from forty to fifty thousand dollars a year to operate the Lincoln Highway Association. In 1916 the Association's work had so far progressed and so generally met with public approval and the results of it were becoming so apparent along the route of the Lincoln Highway in particular, that the Board of Directors felt that they could with justification and also with prospect of success, appeal to the communities along the route of the Lincoln Highway for some measure of support, and through individual

Last lap of the transcontinental journey. The Lincoln Highway leading over the Foothill Boulevard, Oakland.

Sustaining Memberships along the route, pass some of the burden of the support of the organization to those communities which were really getting its most obvious benefits.

Since 1916 the Association has been-securing a yearly increasing revenue from its Sustaining Members, those individuals along the Lincoln Highway and scattered in nearly every state in the Union, who are interested in the work of the Association and wish to be kept in touch with it and who pay $5.00 a year toward the support of the organization, receiving in return the Association's emblem for their car and the constant publications and bulletins issued by the Association tracing the progress of the work.

As was foreseen, the year 1919, following so closely upon the heels of war, witnessed the greatest constructive development on the Lincoln Way ever accomplished in a single year.

The United States Office of Public Roads announced in December, 1919, that every organization in the country having any part in highway improvement undertakings, could feel a large measure of satisfaction in the fact that road building was the one big public activity which got under way promptly following the war, which opened a large field for unemployed labor and which offered a market for construction material. American highway improvement inaugurated post-war developments on a large scale.

The year's developments along the Lincoln Way are an excellent barometer of the highway situation in the United States. A picture of the progress on the Lincoln Highway but mirrors the average activity along tens of thousands of miles of interstate highways branching from America's backbone route to every section of the Union.

The Lincoln Highway, which was at first largely a series of connecting county roads, has gradually become through official action of the various states, an integral portion of the several state highway systems, with the result that the tabulation of expenditures provided direct to the Association by the State Highway Departments of the eleven states traversed, very accurately indicates now not only the amounts expended, but the mileage of improvement accomplished.

In the majority of states federal aid has largely augmented the state and county funds, the route having been established as a federal aid road, to be improved directly under the inspection of the Government, for more than three-quarters of its total distance between New York and San Francisco. In the following table showing the expenditures on the Lincoln Highway in each state, the amount of federal and state aid accurately reported through the Highway Departments, is augmented by such scattered county reports as were available. But in nearly every state the expenditures were larger than the actual detailed figures reported.

Expenditures on the Lincoln Highway, 1919, new construction, reconstruction and maintenance were as follows:

| | |
|---|---|
| New Jersey | $ 1,383,572.00 |
| Pennsylvania | 1,418,169.28 |
| Ohio | 1,903,708.10 |
| Indiana | 742,218.30 |
| Illinois | 1,430,120.28 |
| Iowa | 256,899.29 |
| Nebraska | 613,025.00 |
| Wyoming | 127,009.94 |
| Utah | 225,528.54 |
| Nevada | 411,049.58 |
| California | 375,500.00 |
| Total | $ 8,886,800.31 |

To the above must be added much of the county construction and maintenance work and city paving for which it is impossible to get accurate detailed figures. Conservative estimates resulting from actual inspection of such work in progress indicates that these unreported expenditures amounted to over $500,000.00 in 1919.

Below is a list of contracts let for Lincoln Way improvement, 1919, work financed but not yet done:

| | |
|---|---|
| New Jersey | $ 97,000.00 |
| Ohio | 40,909.00 |
| Illinois | 1,103,029.31 |
| Nebraska | 810,030.28 |
| Wyoming | 108,424.00 |
| Utah | 55,000.00 |
| Nevada | 108,720.00 |
| Total | $ 2,323,112.59 |

The total financing for Lincoln Way improvement in 1919 was as follows:

| | |
|---|---|
| Detailed Expenditures Reported | $ 8,886,800.31 |
| Unreported Improvement Work (Estimated) | 500,000.00 |
| Funds Provided for Contracts Let | 2,323,112.59 |
| Total | $11,709,912.90 |

To give significance to the meaning of the above figures as showing the tremendous impetus given Lincoln Way improvement during the past year, the following table is presented indicating the amounts expended for Lincoln Highway construction and maintenance during each year since the Association actively undertook the work.

It is interesting to note that the total amount spent for Lincoln Highway improvement by all of the states crossed by the road between the two coasts in 1914 was less than the amount spent on the work in four separate states during the past year. It is also significant of the impetus under which the work has gone forward since the armistice, to note that the total financing for Lincoln Highway improvement during the past year, was only about a million dollars short of the total actual expenditures for the five years 1913 through 1918.

While construction costs are interesting as reflecting the increasing demand for proper permanent improvement and a correspondingly increased willingness to liberally provide the necessary money for the work, the tourist or traveler or those interested in highway freight transportation will be more concerned with the constructive results accomplished through the expenditures noted.

It is significant that a greater proportion of the total expenditures on the Lincoln Highway in 1919 were put into permanent work, in the nature of a lasting investment to the states and the Nation, than ever before. The Association has from the first never ceased to urge a standard of permanent construction designed to meet the traffic of the future. An increasing willingness in every state to expend the additional money necessary to build types of road which will be cheaper in the long run and provide adequately for the increasing weight and volume of future highway transportation, is indicated by the following table showing only the work of permanent nature accomplished on the route in 1919:

| | |
|---|---|
| Concrete | 121.14 miles |
| Brick | 21.28 miles |
| Bit. Macadam | 17.61 miles |
| Macadam | 28.75 miles |
| Shale | 2.00 miles |
| Gravel | 69.25 |
| Permanent Earth Grade | 117.30 |
| Total | 377.33 |

# Cost of a 3-Story Warehouse

By W. C. HUNTINGTON, Professor of Civil Engineering, University of Colorado

In the fall of 1919, contracts were signed for a 3-story warehouse located in Denver, Colo. This building is now nearing completion. The building is of steel cage construction with intermediate beams of 8 in. x 18 in. douglas fir located at the third points of the girders. The floor consists of heavy timber with oak slip tongue and a maple wearing floor. The foundations are concrete and the exterior walls brick laid in cement mortar. On two sides these walls are carried by the steel framework, the remaining walls being bearing walls. The roof is 5-ply tar and gravel on 2-in. matched sheathing. A portion of the first floor is devoted to a display room with tile floor. Plate glass windows are provided on two sides of the building in the first story. There are eight offices on the second floor, the remaining portion of the second floor and the entire third floor being used for storage of light electrical equipment. The basement extends under the entire building and has a concrete floor.

The building is heated by the vapor steam system and is protected from fire by a Grinnell sprinkler system.

One passenger and one freight elevator are provided.

Provision is made in the foundations, columns, walls, and roof girders for the addition of a fourth story.

The total cost of the building was 21 ct. per cubic foot distributed as follows:

| | Per cu. ft. |
|---|---|
| Excavating, brick and stone | $0.043 |
| Heating and plumbing | .020 |
| Carpenter work | .073 |
| Electric wiring | .003 |
| Plaster and concrete | .009 |
| Painting | .005 |
| Elevators | .010 |
| Sprinkler system | .012 |
| Tile floors | .005 |
| Steel | .030 |
| Total cost | $0.210 |

All work was done by contract. Carpenters were paid $8 per day, bricklayers $9, plumbers $9, and common laborers $4.

The G. W. Huntington Architect Co. was architect for the building and the structural design was done by the writer.

* * *

# Competition for Aquatic Park

The Board of Works of the City and County of San Francisco have instituted a students' competition, covering a solution for an Aquatic Park at the foot of Van Ness avenue. The judges and prizes are as follows:

M. M. O'Shaughnessy, City Engineer ..... San Francisco
John Reid, Jr., City Architect ..... San Francisco
Frederick H. Meyer, 742 Market Street ..... San Francisco
John Bakewell, 251 Kearny Street ..... San Francisco
J. E. Scully, Phelan Building ..... San Francisco

First prize, $250; second prize, $200; third prize, $100; fourth prize, $50; fifth prize, $50.

Inasmuch as for a students' competition, the prizes are rather generous, it is hoped that a good many will enter the competition, and that it will help in stimulating the students' work.

All those desiring to enter, please address, M. M. O'Shaughnessy, City Engineer's Office, City Hall, San Francisco.

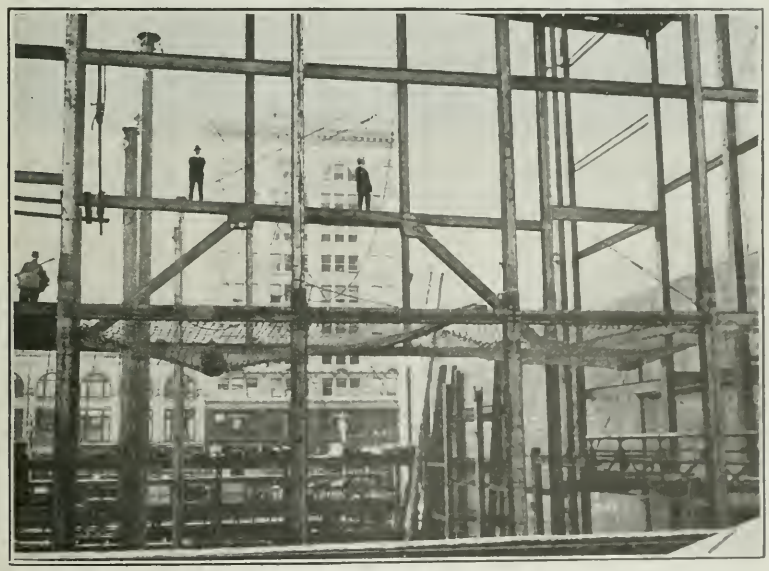
# Department of Safety

Conducted in the Interests of the Building Public and With the Co-operation of the California Industrial Accident Commission

## Preventing Accidents on Construction Work

By J. J. ROSENTHAL, Safety Engineer, Industrial Accident Commission.

ALTHOUGH a considerable amount of attention has been devoted to accident prevention on railroads and in manufacturing industries, construction work has been almost entirely neglected in this respect. There seems to be two reasons for the lack of attention to this field—one is that such work is classed as temporary and of short duration, the other is that the worker is injured either by his own fall or by the falling on him of some object from above; that is, the worker is to be shielded from the action of gravity as a force. In answer to these arguments, one might ask why construction should be classed as a temporary industry, and of short duration to the worker. Is it not true that carpenters, masons and mechanics in other building trades in our cities and country average as much time in



SAFETY NETS TO CATCH FALLING WORKMEN

At the request of the Industrial Accident Commission these safety nets were first used west of Chicago in building the California Theatre at Market and Fourth streets, San Francisco. Four nets made of one-half-inch manila rope were purchased, size 10x30 feet, at a cost of $60 each. These nets can be easily transferred from job to job.

employment as men in many of our manufacturing industries ? From the standpoint of the safety engineer, construction work can not be classed any more as a temporary industry than manufacturing or transportation, because safety precautions are as necessary and as applicable, no matter how long it takes to complete a structure or any construction project. The worker can be shielded from the action of the force of gravity by providing rigid and substantial scaffolds, stagings and flooring for him to stand on while working on structures and affording him sufficient covering above to prevent any tools or materials from falling on him.

California stands as one of the pioneer states in the attention given to safety in this field. To give some illustrations, the 12-story Santa Fe Building recently constructed in San Francisco, a structure 45 by 90 feet, costing $350,000, involved the following costs for safety measures: Five temporary

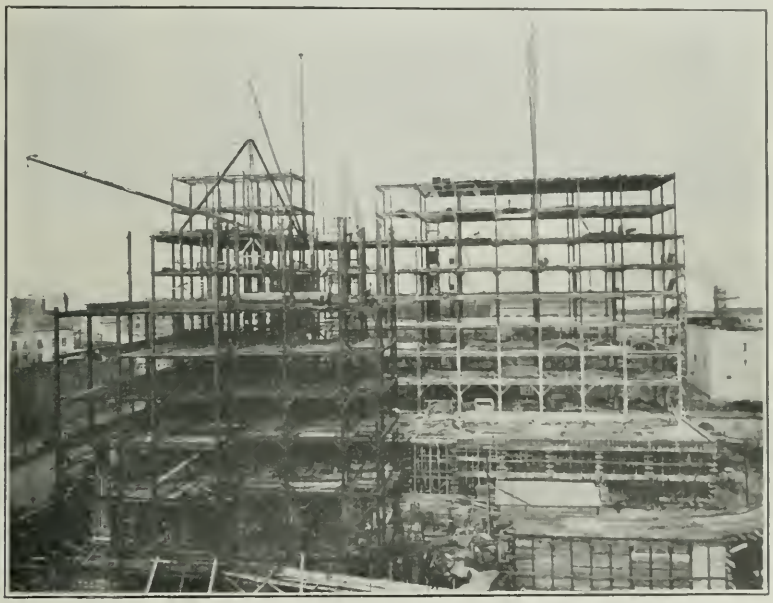
These columns and trusses were put up for a moving picture house without lateral and sway bracing. It was difficult to keep the members plumb with cables and dangerous to the men working 60 feet above the ground without any planking or safety nets below them.

floors used by the steel erectors to protect them from falling, and as a protection from falling materials, at $111.76 per floor; twelve double ladders at $1.50 each; 135 feet of suspended safe scaffolding used by bricklayers at 33 cents per foot; a 5 x 5-foot tower, 196 feet high, with cage for hoisting materials, at $1.25 per foot; guarding 24 openings, 6 x 14 feet, for elevator shafts and stairways with railings 3 feet, 6 inches high at $1.50 each; 135 feet of temporary enclosed sidewalk at $1.00 per foot; the total cost of safeguarding 175 workers, who were engaged in building this structure for a period of six months, was $1,037.35, or $5.92 for each worker.

The California Theatre, San Francisco, the largest moving picture house west of Chicago, a structure 100 by 170 feet in plan, and 100 feet high, involved the following costs for safeguarding: Four safety nets 10 by 30 feet, $240; labor for shifting the nets around the building, $30; planking portions of the structure where it was practicable, $150; the total cost of safeguard-

ing 30 men for a period of 38 days was $420; deducting the cost of the nets which are still as good as new, and are worth $200, the cost of safeguarding the structural ironworkers on this building was only $220. If false work and planking had been used to protect the ironworkers on this structure, it is estimated that it would have cost about $3,500. If a fatal accident had occurred to a laborer on these structures, it would probably have cost the contractor $2,700 for compensation, or if a mechanic had been killed it would likely have cost $5,000, as these are average sums paid where there are dependents. These sums of money represent only the economic loss; they would not pay for the life, nor relieve the mental sufferings of those dependent upon the worker.

Past statistics show a fatal accident for each story above the tenth on a



View of Southern Pacific Building taken in February, 1917. It is generally conceded that this structure was erected in unusually quick time. One of the factors in the speed attained was the safety provisions which proved to be efficiency measures as well. Note how thoroughly all floors are covered for the protection of the workmen.

building over ten stories high. On the Santa Fe building, and the California Theatre, however, there was neither a fatal accident nor permanent injury, but only one slight accident.

* * *

# Elevators

## Standard Semiautomatic Gates

By E. C. WOOD, Chief Elevator Inspector.

THE standard semiautomatic gate, as shown in the accompanying photograph, is 5 feet 6 inches in height, as is required by the Elevator Safety Orders of the Industrial Accident Commission, where building conditions permit. It is substantially built, consisting of three heavy hardwood horizontal members, and dowel vertical members, covered with fine wire mesh.

STANDARD SEMIAUTOMATIC ELEVATOR GATES

The lowest horizontal member is approximately flush with the floor when the gate is closed. A slot 5 inches wide and 3 feet long has been provided at the upper right hand to afford access to the operating rope. This does not compel a person to raise the gate in order to bring the car to any floor.

The installation of such gates is possible in practically every new building, provided the architect and elevator builder co-operate to the extent of providing the necessary hatchway construction and clearance, permitting the installation of the gates on the inside of the wellway. In the building represented by the accompanying photograph, the standards of the Industrial Accident Commission were rigidly adhered to throughout the installation, with the result that safe and satisfactory elevator service has been maintained since the completion of the building some two years ago.

* * *

## Washington State Chapter 259th Meeting

The 259th meeting was held Wednesday April 7, at the Blue Bird Cafe, Seattle, present twenty-five members.

The Chapter had as its guests of the evening, Mr. Arnold, President of a new chapter of the National Fire Prevention Association, recently formed in Seattle; the secretary of the Association, Captain Stanslo of the Fire Department; and Mr. Moore, the Director of Manual Training of the Seattle Public Schools.

Minutes of the previous meeting were read and approved without correction.

The Secretary read a number of communications. one of which was from the Institute relative to the exhibit to be held in Washington during the Convention. Following the reading of the letter from the Institute, Mr. Willcox moved that the arrangements for the participation of this Chapter be left to the Exhibition Committee. The motion was seconded by Mr. Baeder. Mr. Willatzen objected to the form of the motion, due to the financial arrangements which had to be made, and wished to have a special committee appointed to handle the

Washington exhibit. Mr. Willcox suggested a substitute motion: "That the financial arrangements be left to the Executive Committee and that the Exhibition Committee handle the Washington exhibit." Some discussion followed on the method of bearing the expense of the exhibit, which according to the Institute's communication would be at the rate of $2.00 each for every Institute member in the Chapter. The report of the Exhibition Committee having not been heard, Mr. Baeder moved that the question before the House be laid on the table, which motion was carried.

The President then called upon Mr. J. E. Blackwell, recently appointed Superintendent of Buildings, city of Seattle, for some remarks. Mr. Blackwell stated that he had not as yet formed any definite policy, but was making a thorough investigation and study of the work of his department, and desired to have the help and suggestions of any of the chapter members in connection with his work.

The report of the Exhibition Committee was made by Mr. Willatzen, Chairman, who desired to call the Chapter's attention to the fine work which had been done by Mr. R. M. Hoffman, the landscape architect, in the laying out and arranging of the settings for the exhibit. Mr. Willatzen moved that the Chapter express its appreciation to all those who assisted in the success of the exhibit. The motion being seconded, it was carried. Mr. Willcox moved "That the report of the Exhibition Committee be accepted, and that they and the special committee of ladies be given a vote of thanks for their work." The motion was passed, and the Secretary was instructed to write letters of thanks to each of the non-chapter contributors to the exhibit. Mr. Baeder then moved that the subject of the Washington exhibit be taken from the table, which motion being seconded was carried. Mr. Willcox then moved that his former motion: "That the financial arrangements be left to the Executive Committee and that the Exhibition Committee handle the Washington exhibit." be considered. The previous motion was then put and carried.

The Committee on Institute Affairs, Mr. Huntington, Chairman, reported in reference to the expense of delegates to the Convention, and he moved that in accordance with the usual custom of the Chapter, $300 be appropriated for expenses of delegates to the Convention. The motion being seconded by Mr. Willcox was passed. Mr. Huntington called the attention of the Chapter to a communication from the Minnesota Chapter containing a resolution of considerable length relative to Convention matters, and it was resolved that consideration of this be postponed until the meeting of the Chapter called for the consideration of purely Institute matters.

Mr. Bullard called the attention of the meeting to the very interesting exhibition being held at the Tacoma Fine Arts Society, and invited all members to view the exhibit.

Mr. Arnold, President of the Washington Chapter of the National Fire Prevention Association, one of the principal guests of the evening, was introduced and spoke upon fire prevention. He requested the Chapter to select one of its members to be placed on the Executive Committee of the organization, and stated the desire of his organization to cooperate with the Chapter in the framing of more comprehensive ordinances regarding the erection of buildings and fire prevention. Captain Stanslo, Secretary of the Fire Prevention Association, drew the attention of the meeting to the many dangerous habits conducive to the increasing of fire hazards, and pointed out that it was a question of education in a great measure, as had been proved by the work accomplished in the public schools and elsewhere—following which the President announced that the suggestion of the appointment of a member on the Executive Committee of the Fire Prevention Association would be considered by the Executive Committee of the Chapter and the appointment made by the President. Mr. Blackwell moved that a Fire Prevention Committee of the Chapter be formed to cooperate with the Fire Prevention Association and to interest the public generally. The motion was seconded by Mr. Willatzen and was passed.

Mr. Moore, Director of Manual Training of the Seattle Public Schools, discussed at length the subject of architectural drawings in the high schools, going at some length into the various courses and the division of the work. He stated that he desired to have some of our members address particular classes in the various high schools and wished to have the cooperation of our Educational Committee in all of his work.

Mr. Borhek spoke of the publicity work done by the Tacoma Society and the arrangements which they had been asked to make by the Tacoma Commercial Club for an Architects' Day at the Club and the desire of the Tacoma members to secure a large part of the Exhibition Committee's material to be shown at the Commercial Club at that time. Mr. Borhek also thought it very desirable to have a business man, appreciative of the value of architecture, address a meeting of the Commercial Club at that time. He also outlined the policy of the Tacoma society relative to publicity.

At the request of Mr. Baeder, Mr. Moore explained the Smith-Hughes Federal Educational Act at some length.

G. C. Field,
Secretary Pro tem

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## *PRINCETON UNIVERSITY SCHOOL OF ARCHITECTURE*

The announcement of the opening of a School of Architecture in Princeton University does not mark a new creation, but the completion of a plan which has been in process of development for several years.

During this experimental period it has been possible for undergraduates in Princeton to elect courses in the Departments of Art, Mathematics and Civil Engineering, which, with a certain amount of extra-curriculum drawing, would save them from one to two years in the regular four-year courses of the professional schools of architecture. As a result of this careful and studied growth there has lately been established in Princeton University a thoroughly equipped School of Architecture which, while embodying all the fundamentals of architectural study, is conceived along new lines. It proposes to build its architectural work upon the required basis of a Princeton Bachelor of Arts degree. With this in view, the School has been established as a branch of the Department of Art and Archaeology, and is designed primarily to coordinate the undergraduate studies of the men electing this Department who look forward to architecture as a profession, to graduate them with the Bachelor of Arts degree in four years, and to fit them for the professional degree in architecture in two additional years. While based upon a thorough undergraduate preparation in the history of art, the School is open to students graduating or transferring from other colleges and universities, if they have complied, or are willing to comply, with the requirements of Princeton University.

The chief considerations which led to the establishment of a School of Architecture at Princeton are:

First.—The conviction that a completely rounded college course is an invaluable asset to the successful architect. This is the belief of a number of distinguished architects who have been consulted and who agree that an architectural school which seeks to produce only the highest type of architect, should require candidates for its degree first to secure a Bachelor's degree at the end of four years of liberal training in the broader educational subjects such as ancient and modern languages

history, literature, economics and mathematics.

Second.—The fact that architecture is first an art, and secondly a science, and should be taught primarily as an art. The technical aspects of the profession, such as business administration, safe and durable construction, and civic building regulations, while having their necessary place in the training of an architect and their due consideration in the Princeton course, can best be learned by actual practice in an architect's office. The architects who have won the most lasting renown are those who have been the greatest artists, men with the power to design buildings which are lastingly beautiful.

Third.—The belief that the adequately trained architect must not only know and thoroughly appreciate the historical development of architecture, but must realize, through historical study, the extent to which the other arts, until modern times, have been the handmaids of architecture. There is a growing sentiment on the part of critics and successful architects that the architectural-school graduate is often insufficiently acquainted with the allied arts of sculpture and painting, and the coordination of all the arts.

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### *STABILIZING HARDWOOD LUMBER PRICES*

It looks as if hardwood lumber prices are commencing to stabilize.

People have had in mind that the prices of hardwoods were extremely high but all will agree that when compared with other commodities they are not out of proportion. The real facts are that prices of hardwoods remained at comparatively a low level up to a year ago and then when the rise commenced, in order to catch up to their correct level in proportion to other commodities, they had to take some pretty long jumps. Hardwood prices have attracted attention because they reached their present standing rather precipitously.

Present conditions, however, point to a stabilization and equalization of prices of the various hardwoods. By equalization is meant the adjusting of prices of the different hardwoods to their proper relation to one another according to their actual value. The prices of hardwoods can never go to the levels of former years because it is not within reason that labor will return to those levels. It cannot be expected that lumber will ever be as cheap as it was years ago when labor received $1.25 a day and forests were close at hand.

Prices may have reached the peak now; we hope they have; but we cannot hope for any great recession. What we do expect is a stabilization at the present levels with a few readjustments which will work to the benefit of millman, wholesaler and consumer.

It is a significant fact that prices of hardwood lumber itself, except in a few instances, have not had any recent advances while prices of further manufactured wood, such as flooring and veneered panels, have gone up.

## *Notes and Comments*

**$3.00 per Square Foot for Office Rent**

In Seattle, Washington, the owners of a proposed office building have been getting estimates on the cost of a ten-story structure and simultaneously have endeavored to "sound" some prospective tenants to see if they would be willing to pay a yearly rental averaging $3 per square foot. In a statement sent out by the company this information is set forth that in November, 1916, the company architects, Messrs. Howells & Albertson, made an estimate of the cost of a 10-story fireproof office building 105x80 feet, and the amount was figured at $325,000. Recently the same architects made a careful check of the cost of building the same structure and the amount was shown to be $600,000.

The prospective builders in question call attention to the practicability of cooperative office structures and state in the announcement that in many Eastern cities large buildings have been constructed under this plan and that if sufficient interest is manifested by firms in need of high class space the company might be induced to erect a suitable unit at this time despite high construction costs.

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**The Easterner Forgets About California's Sunny Climate**

"How is it you received only one bid for furnishing water to the Custom-house for the coming year?" queries some one in the Treasury Department at Washington. To which Frank McDonald, custodian of the building, replies that there is only one water company in San Francisco.

"Please see to it that the snow is shoveled off the roof and eaves of the Custom-house," is another admonishment from Washington. "We do not believe the building will stand a great weight of snow."

McDonald stifled an impulse to pen a sarcastic reply, simply stating that he would see to it that the snow is carefully shoveled off as soon as it falls.—S. F. Daily Paper.

That reminds us that some years ago a well known firm of Eastern architects designed a San Francisco office building and had the roof and cornice equipped with steam pipes to melt the ice and snow.

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**Shall We Have a U. S. Department of Public Works?**

The question of whether or not the federal government should establish a Department of Public Works was recently submitted for a referendum vote to the 1305 member organizations of the United States Chamber of Commerce. The result of the referendum will determine the National Chamber's attitude on this question when it comes up for Congressional action.

The Committee appointed by the National Chamber to make a study of this matter drew up the following questions for submission:

1. Shall there be established by the national government a Department of Public Works?
2. Shall such Department be established by a suitable modification of the existing Department of Interior excluding therefrom the non-related bureaus or offices and by the change of name of the Department of Interior to the Department of Public Works?
3. Shall such department be established by the creation of an entirely new department?

The desirability of a Federal Department of Public Works was suggested by the Engineering Council, an organization member of the National Chamber. The Engineering Council believes there is an urgent need in the national government for such a department to carry on the work of an engineering and construction character.

The Engineering Council has gone on record as favoring the adoption of the Jones-Reavis Bill, now pending in Congress, providing that the name of the executive department at present designated as "Department of Interior" be changed to the name of "Department of Public Works" and that the head thereof shall continue to be a member of the Cabinet under the official designation "Secretary of Public Works."

This bill would transfer much of the work now transacted by Bureaus under the Department of Interior to other departments and would also place additional bureaus under the new Department.

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**Educating the Public in the Appreciation of Architecture**

Men in the profession who are giving serious thought to the development of architecture so that it may serve a wider field of usefulness in the upbuilding of our country realize that nothing is more important than cultivating a better knowledge of the art by the public. Architects can only exercise their talents through employment by the public, and if there exists only half knowledge or, what is worse, incorrect knowledge, of the profession and its work, the opportunities for advancing architecture are extremely limited. The joy that is to be had from appreciation of the beautiful must be made real to the laymen, and this task devolves upon architects and artists who have the ability to express this great asset in clear terms that will be easily understood. It is no small undertaking, but neither are the results small that would emanate from the attempt, and they are worthy of any effort that will bring them about.

Mr. Kelsey, in an interesting paper in The Architectural Forum, indicates the general sympathy of the heads of the larger educational institutions of the country that awaits a concerted movement in this direction. As he points out, this is only one medium for disseminating knowledge of the art of architecture; the work must be carried into the public schools where it will take root in the minds of children whose ideals are in the process of development.

Another source of knowledge is the popular press. A significant instance of the effectiveness of such means is the publication of an article by Mr. D. Knickerbacker Boyd, architect of Philadelphia, in The Ladies' Home

Journal. Mr. Boyd's paper is entitled, "The Duties of Your Architect." It is a clear and straightforward presentation of the subject to the lay person.

Educational work of this character should have the active support of the American Institute of Architects. Scattered efforts of individual architects point the way and prove the possibilities. The need exists and is fast being recognized, there remains only the necessity for centralization of effort and persistency of purpose to secure great benefits to profession and public alike.

## The Woman Engineer

Editorial in The Engineer, London, Jan. 9, 1920.

The position of women in engineering and other professions and trades is one of those matters that will settle itself. If they are better than men, they will get work, and if they are not they won't, and that, as our American friends would say, is "all there is to it." That is the final position which will be reached when equilibrium has been attained. Speaking as mere males, it does not alarm us a great deal. Nature has not fitted women for engineering, and though here and there one may break away from the normal, just as we may find now and then a great woman novelist or a tolerable woman artist, so a few times in a century women may reach eminence in engineering. When we say engineering, we mean engineering, and we do not mean the mere mechanical handicraft which has been so facilitated by a succession of inventions that, except in a few occupations—rapidly disappearing—where muscular strength or physical endurance is required, anyone can become an expert in a few weeks. It is astonishing that women should desire to engage in such work. but the sex was always, and will always be, incomprehensible. We are sorry to see from the first number of a little quarterly published by the Women's Engineering Society, and called the Woman Engineer, that mechanical craftsmanship and engineering are confused, though we admit that the bad example was set by the male sex. But it is unfortunate that just at a time when engineers are endeavoring to effect some distinction between the mechanic and the scientifically trained engineer anything should be done to support or perpetuate the misuse of the word "engineer." If women desire to remain in the craft of engineering they must be content to call themselves women-mechanics, women-machinists, women-fitters, and so on. With the example of the ill that has resulted from the confusion amongst men engineers, they will be ill-advised if they do not take earliest opportunity of making a clear distinction between those who are able to earn a decent income by a training extending over a few weeks or months and those others, on a higher plane, who, after years of study, and considerable expenditure of their fathers' money, manage with difficulty to make both ends meet, and only in exceptional cases have the pleasure of seeing them lap over.

## Accurate Cost Data on Wood Frame and Stucco House

Following is a summary of an estimate on a twelve-room two-family house, prices, New York market, 1915—1919, taken from a recent government report:

| | 1915 | 1919 | Ratio |
|---|---|---|---|
| Excavation | 199.23 | 293.97 | 1.48 |
| Masonry | 573.37 | 847.09 | 1.48 |
| Interior plaster | 365.80 | 549.47 | 1.50 |
| Exterior plaster | 284.77 | 458.05 | 1.60 |
| Rough carpentry | 1,199.50 | 1,704.54 | 1.42 |
| Finished flooring | 170.67 | 224.18 | 1.31 |
| Screens | 37.90 | 48.00 | 1.27 |
| Millwork (exterior) | 241.25 | 386.08 | 1.60 |
| Millwork (interior) | 331.96 | 544.50 | 1.64 |
| Roofing | 120.57 | 198.96 | 1.65 |
| Painting | 138.88 | 243.05 | 1.75 |
| Plumbing | 311.84 | 410.00 | 1.35 |
| Hot-air heating | 373.94 | 528.00 | 1.41 |
| Electric work | 80.45 | 118.00 | 1.47 |
| Finish hardware | 45.70 | 80.00 | 1.75 |
| Rough hardware | 42.80 | 75.00 | 1.75 |
| Total | 4,518.63 | 6,708.89 | .... |
| Percent of increase 1919 over 1915 | ..... | ..... | 48.4 |

Editor's Note—The per cent of increase at this writing is considerably more than the figures quoted.

## Appreciation of Good Architecture

There are many signs of a growing appreciation of good architecture. During the last few years it has been greatly stimulated by city planning campaigns and public consideration of housing questions. As a result of the latter, particularly, more thought is being given today to good architecture than ever before. The barracks idea of homes for workmen has passed for good. Consideration is given now to the appearance of even the cheapest bunkhouse.

Good architecture is recognized as an asset in practically every type of building. It enhances values. But with this growing appreciation of the value of good architecture the necessity of educating the public to the highest standards should not be overlooked. If good architecture is to become universal, as many people hope that it will, some day, there is no reason why we should not have the best and not merely something that does not offend the eye.—Southwest Builder and Contractor.

## Shrine Auditorium

Mr. John C. Austin, 1125 Baker-Detwiler building, and Mr. A. M. Edelman, I. W. Hellman building, Los Angeles, associated, have been commissioned to prepare preliminary plans for the new Shrine auditorium to be erected at Jefferson and Royal streets for Al Malaikah Temple to replace the building destroyed by fire several months ago. Details have not been definitely determined, but it will probably accommodate about 5000 people and be of Class A construction.

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# With the Architects

## Building Reports and Personal Mention of Interest to the Profession

### Architects Protest Alliance With Unions

Taking note of an announcement through the Institute Journal that members of the American Institute of Architects are bound to observe the decisions of the national board of jurisdictional awards in writing specifications under "penalty of suspension from the Institute" the Southern California Chapter of the Institute has registered a protest against the Institute carrying out the plan adopted at the Nashville convention and has requested that the Institute withdraw from the board and in the future submit all questions of alliance with outside organizations to the membership for at least one year prior to final action being taken.

The national board of jurisdictional awards is composed of representatives of the American Institute of Architects, Engineering Council, Building Trades, department of the American Federation of Labor, and the Associated General Contractors of America, according to the Institute Journal. It was formed to settle disputes between unions representing various crafts over certain work to be done by each craft. Each organization is bound by its representatives signing the agreement to abide by the awards of the jurisdictional board.

### Architects for Sacramento Schools

The new Elementary school buildings which are to be erected in Sacramento under a $2,000,000 bond issue will be designed by Messrs. E. C. Hemmings and Jens C. Petersen, architects, with Mr. George Hudnutt as structural engineer. Their compensation will be 4½ per cent.

### $250,000 M. E. Church

Messrs. Baker, Vogel & Evans, Pacific block, Seattle, have been commissioned to prepare plans for a $250,000 masonry church building for the First Methodist Episcopal congregation of Medford, Oregon.

### County Hospital Competition

Competitive plans for a county hospital at Redwood City have been submitted to the Board of Supervisors of San Mateo county, by Messrs. E. L. Norberg, W. D. Shea and W. H. Toepke.

### Personal

Mr. Charles W. Deusner and Miss Helen Dupuy Deusner announce that they have resumed the practice of Landscape Architecture in Southern California, under the firm name of C. W. and H. D. Deusner, with an office at 15 North Euclid Avenue, Pasadena, California.

Mr. Edgar W. Maybury of Pomona, California has established offices at 125 West Monroe street, Phoenix, Arizona, as representative of Messrs. Reginald D. Johnson, architect, and Gordon B. Kaufman, associate, of Pasadena. Mr. Maybury will be pleased to receive catalogues and building samples from the trade.

Messrs. G. C. Field, Carl F. Gould and Louis Baeder, architects, Seattle, attended the annual convention of the American Institute of Architects in Washington May 5, 6 and 7, as delegates from the Washington State Chapter of the American Institute of Architects.

Mr. Geo. S. McCrea, architect in the Pacific building, Oakland, has moved to Capitola, where he has under construction a large summer hotel and other buildings.

Mr. John J. Donovan, Oakland architect, has moved his offices from the Perry building to the fifth floor of the Pacific building.

### Orphanage Buildings

Mr. Alfred Henry Jacobs, architect in the French Bank building, San Francisco, is completing working drawings for the first unit of a group of buildings for the Pacific Hebrew Orphan Asylum and Home Society on the block bounded by Faxon and Ashton avenues, San Francisco. Construction will be of concrete, brick and frame and besides the administration building, there will be a gymnasium, power house, shop building and nine frame cottages.

### Country Residence

Mr. Henry C. Smith, architect in the Humboldt Bank building, San Francisco, is preparing plans for an attractive country home with garage and other out buildings for Mr. Samuel Rucker, of the Rucker-Fuller Desk Company. The site is a picturesque one in the Los Gatos foothills.

### Architect Headman Busy

Plans have been completed by Mr. August G. Headman, architect in the Call-Post building, San Francisco, for a two-story and basement reinforced concrete store and loft building to be erected on the southwest corner of Mason street and Dickman place, San Francisco, for Mr. Carlo Matraia; also for a one-story and mezzanine floor auto sales building at Van Ness avenue and Eddy street, for Messrs. Harrison & Ramacciotti, and for a one-story reinforced concrete auto sales building on Van Ness avenue, north of Eddy street, San Francisco, for Mrs. Mary A. Ruggles.

### Hanford High School

Plans are being completed by Messrs. Coates & Traver, architects in the Rowell building, Fresno, for a $350,000 high school at Hanford. The Trewhitt-Shields Company of Fresno will be in charge of construction, following out the same lines of procedure as in the Fresno schools. This firm will also be in charge of construction work on the new Dinuba High School building.

### Hospital and Home for Disabled

Plans are being prepared by Mr. Samuel L. Hyman, architect in the Crocker building, San Francisco, for the first unit of a group of buildings for the Hebrew Hospital and Home for Aged and Disabled, to be erected on the Mission road, San Francisco, at an estimated cost of $400,000.

### Concrete Factory

Plans are being prepared by Mr. Edward T. Foulkes, Crocker building, San Francisco, for a three-story reinforced concrete factory to be erected at Bay and Powell streets, San Francisco, for the Simmons Company. The improvement will cost between $75,000 and $100,000.

### Addition to Athletic Building

Plans are being completed by Messrs. Bliss & Faville and a contract has been let to the Lindgren Company for a six-story addition to the Woman's Athletic Club building on Sutter street, San Francisco. The addition will cost $250,000.

### Bronze Memorial Gates

Three huge memorial gates of bronze with granite posts are recommended by the committee which was named to decide upon a suitable memorial for Berkeley's soldiers who died in France.

### Woodland Car Shop

The Unit Construction Company, Phelan building, San Francisco, has the contract to erect a group of car shops at Woodland for the Pacific Car Building Company.

### Amusement Park

Plans drawn by a San Francisco architect for Foxtail Park, Colusa, call for the improvement of the entire park block, and include playgrounds for small children, a band stand, a tennis court, sun dial, rest arbors, a pergola and the planting of lawns, decorative shrubbery and flower beds. Mr. W. C. Blean, of the Park Board, states the improvements will cost in the neighborhood of $7,000.

### Portland Apartments

Mr. Herbert Gordon, president of the Lawyers Title & Trust Co., Portland, Oregon, reports that construction of his two apartment buildings will be started as soon as plans are checked and permits issued by the building department.

The larger of the two buildings will be a three-story structure, covering an area of 100x350 feet and will cost $150,000.

### Architects for San Jose Schools

The following San Jose architects have been commisioned to prepare plans for new school buildings and additions to existing structures:

Messrs. Binder & Curtis—High school.
Messrs. Wolfe & Higgins—Horace Mann, Lowell and Grant schools.
Mr. Chas. S. McKenzie—Jefferson and Washington schools.
Mr. Warren Skillings—Gardner school.
Mr. Louis Lenzen—Hawthorne school.

### Two New Theatres

Messrs. Reid Bros., architects in the California-Pacific building, San Francisco, have completed plans for a Class "A" theatre to be built in Fresno for Messrs. Rowell & Foley; also for a reinforced concrete store and theatre building in Martinez, for Messrs. McKeon & Saul. The two structures will cost about $100,000 each.

### Social Hall for Railroad Employees

Plans are being prepared by Mr. C. W. McCall of Oakland for a two-story frame social hall having a dance floor and a stage and which will be erected at Second avenue and Sixteenth street, Oakland, for the San Francisco Oakland Terminal Railway.

### New Hospital at Burns

The plans for the new hospital have been accepted as prepared by Mr. M. P. White of Baker, Ore., and construction will be started soon. The cost of the new structure will be $50,000.

### Gymnasium Building

Plans have been completed by Mr. W. J. Wythe, Central Bank building, Oakland, for a reinforced concrete gymnasium to be built at Dos Palos, Merced County, at a cost of $25,000.

### Bank Buildings

Mr. James T. Narbett of Richmond is preparing plans for a one-story reinforced concrete and terra cotta bank building to cost $70,000 for the Mechanics Bank of Richmond.

Mr. William H. Weeks, 75 Post street, San Francisco, is preparing plans for a one-story concrete and brick bank building for the Red Bluff National Bank. Structure wil cost $75,000.

### Masonic Temples

A contract has been awarded to Messrs. MacDonald & Kahn for the construction of a $250,000 Masonic Temple at Stockton, from plans by Mr. Carl Werner, architect of San Francisco. The Scottish Rite Masonic bodies of San Jose have purchased a lot at Third and St. James streets, that city, as a site for a $200,000 cathedral.

### Two Packing Plants

Mr. Phillip Bush, chief engineer for the California Packing Corporation, has completed plans for a four-story brick factory and warehouse which the company will build at San Jose. Mr. Bush has also made drawings for a two-story brick warehouse to be erected at Sixth and G streets, Sacramento.

### Concrete Factory

Messrs. Reed & Corlett, Oakland Bank of Savings building, Oakland, are preparing plans for a three-story reinforced concrete factory, 80x110, to be built on Twentieth street near San Pablo avenue, Oakland, for the California Peanut Company. The estimated cost is $75,000.

### San Jose Residence

Mr. Clarence Tantau, 251 Kearny street, San Francisco, is preparing plans for a handsome residence to be built on The Alameda, San Jose, for Mrs. W. McLaughlin Leet of that city.

### $2,000,000 Theatre Planned

The Loew-Ackermann-Harris interests are understood to have concluded negotiations for a lease of the corner lot at Powell and Post strets, San Francisco, as a site for a two million dollar theatre.

### Engagement

The engagement is announced of Miss Gertrude E. Comfort and Mr. Irving F. Morrow, both well known to the architectural profession in San Francisco and the Bay cities.

### Episcopal Church

Mr. W. H. Ratcliff, Jr., First National Bank building, Berkeley, has been commissioned to prepare plans for a Gothic church group in Claremont Court for St. Clement's Episcopal Parish.

### Oakland Apartment House

Mr. Maury I. Diggs, Union Savings Bank building, Oakland, has prepared plans for a four-story Class "C" apartment house to cost $100,000 and to be built on Harrison street, Oakland, for Mr. John I. Anzerais. Mr. Diggs is also preparing drawings for a down-town sales building to be erected on Harrison street, Oakland, for the Chevrolet company.

### Housing Survey of San Francisco

Mr. Guy Wilfrid Hayler, City Planning and Housing expert of Chicago, has recently been making a Housing Survey of San Francisco, with a view to the possibility of a new Industrial Housing development. On the completion of the work he has returned to the East and is now engaged with Dr. John Nolen of Boston, Mass., the well-known City Planner.

### Colonial Residence

Plans have been completed and bids taken for a large colonial house which is to be erected in Piedmont Acres for Mr. Frank Buck, Jr. The plans are by Mr. William H. Crim, architect, 425 Kearny street, San Francisco. The house will cost in the neighborhood of $70,000.

### Concrete Apartment House

Mr. J. F. Dunn, architect in the Phelan building, San Francisco, has completed plans for a $30,000 reinforced concrete apartment house which will be built on Hyde strete, near Geary, San Francisco, for Mr. Samuel Rouda.

### Million Dollar Hospital

More than $500,000 is available for erecting buildings at the Pasadena Hospital, and a campaign to raise $500,000 more is now under way. A six-story fireproof structure and other improvements are contemplated.

### "Joyland" Planned

Messrs. H. W. Swalley and James Duffee of Sacramento have leased Nelson Grove, near Woodland, and will convert the place into a "joyland." They plan to build a dancing pavilion, baseball ground and grandstand.

### Fresno Church Building

Mr. Norman F. Marsh, 211 Broadway Central building, Los Angeles, is preparing plans for a new edifice for the Fresno Methodist Episcopal Church to cost $100,000.

### Santa Ana Bank Building.

Mr. John Parkinson, 420 Title Insurance building, Los Angeles, has completed plans for a six-story and basement office and bank building at Santa Ana for the First National Bank of that city.

# With the Engineers

## Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

### Salary Schedule for Engineers in Municipal Service

THE accompanying schedule of salaries of engineers in municipal service is the third national schedule for engineers in public service issued by the American Association of Engineers, it having been preceded by a schedule for state highway engineers and another for county highway engineers. The latter two have been endorsed in final form by the board of directors of the association, but the municipal schedule is still in tentative form and is issued now for the criticism of the profession.

The preparation of these three schedules has been under the direction of the committee on salaries of engineers in public service, of which Mr. A. N. Johnson, Consulting Highway Engineer of the Portland Cement Association, is chairman. Mr. Johnson and the rest of his committee, with the assistance of a large number of corresponding members, prepared the schedules for state and county highway engineers. The municipal schedule was prepared by a sub-committee headed by Mr. S. C. Hadden.

The schedule follows:

PROPOSED RECOMMENDATIONS FOR SALARIES FOR ENGINEERS IN MUNICIPAL SERVICE.

SCHEDULE 1—CITIES UP TO 15,000 POPULATION

| | | |
|---|---|---|
| *City Engineer*— In charge of all engineering work of the city except water works. | $3,500 | $5,200 |
| *First Assistant Engineer*— Duties as assigned; no executive work | 2,400 | 3,000 |
| *Second Assistant Engineer*— Performs or has charge of drafting and surveying work | 1,800 | 2,400 |
| Rodman and chainman | 1,200 | 1,600 |
| *Inspector on Construction Work*— First class | 2,400 | 3,000 |
| Second class | 1,200 | 1,600 |
| *Superintendent of Water Works*— In charge of maintenance, operation and extension of water works system | 1,800 | 3,600 |
| *Superintendent of Streets and Sewers*— In charge of maintenance of city streets and sewers | 1,800 | 3,000 |

SCHEDULE 2—CITIES FROM 15,000 TO 50,000 POPULATION.

| | | |
|---|---|---|
| *City Engineer*— In charge of all engineering work of the city, except water works. | 4,800 | 6,000 |
| *First Assistant Engineer*— Duties as assigned but responsible for office engineering work | 2,400 | 3,600 |
| *Second Assistant Engineer*— Chief of Survey Party and Supervising Engineer on construction | 2,400 | 3,600 |
| *Instrumentman* | 1,800 | 2,000 |
| *Draftsman* | 1,800 | 2,400 |
| *Rodman, Chainman and Tracer* | 1,200 | 1,600 |
| *Inspector on Construction Work*— First class | 2,400 | 3,000 |
| Second class | 1,200 | 1,600 |
| *Superintendent of Water Works*— In charge of maintenance, operation and extension of water works system | 3,600 | 5,000 |
| *Superintendent of Streets and Sewers*— In charge of maintenance of city streets and sewers | 2,400 | 4,000 |

SCHEDULE 3—CITIES FROM 50,000 TO 100,000 POPULATION.

| | | |
|---|---|---|
| *City Engineer*— In charge of all engineering work of the city except water works. | 5,500 | 7,500 |
| *Deputy City Engineer*— Office engineering and special work as assigned | 3,200 | 4,800 |
| *Division Engineer*— In charge of surveying operations and supervision of city construction work | 3,000 | 4,500 |
| *Assistant Engineer*— Reports to division engineer and acts as chief of party or construction superintendent | 2,800 | 3,600 |
| *Instrumentman* | 2,200 | 3,000 |
| *Draftsman* | 2,200 | 3,000 |
| *Rodman, Chainman and Tracer* | 1,500 | 1,800 |
| *Inspector on Construction Work*— First class | 2,600 | 3,200 |
| Second class | 1,500 | 1,800 |
| *Superintendent of Water Works*— In charge of maintenance, operation and extension of water works system | 4,500 | 6,000 |
| *Superintendent of Streets and Sewers*— In charge of maintenance of city streets and sewers | 3,600 | 4,800 |

SCHEDULE 4—CITIES FROM 100,000 TO 300,000 POPULATION.

| | | |
|---|---|---|
| *Department Commissioner*— Commissioner of department of public works or head of special commission as on transportation, sewage disposal, additional water supply or other similar work of the first magnitude | 7,500 | 10,000 |
| *City Engineer*— In charge of all engineering work of the city except water works | 7,000 | 8,500 |
| *Deputy City Engineer*— Principal assistant to city engineer assigned to special work. | 4,800 | 5,400 |
| *Division Engineer*— In charge of major subdivision of the city engineering work, such as pavements, sewers, bridges, etc. | 4,000 | 4,800 |
| *Office Engineer*— In direct charge of design, reporting to division engineer | 3,600 | 4,000 |
| *Assistant Engineer*— First grade | 3,200 | 3,800 |
| Second grade | 2,800 | 3,100 |
| Reports direct to division engineer and acts as chief of party, squad leader or construction superintendent. | | |

*Testing Engineer, Chemist or Bacteriologist—*
In charge of testing work in construction material laboratory, water purification plant or sewage treatment plant ..... 3,200 3,800
*Instrumentman* ..... 2,400 3,200
*Draftsman—*
First grade ..... 2,400 3,200
Second grade ..... 1,800 2,100
*Rodman, Chainman and Tracer*..... 1,700 2,000
*Inspector on Construction Work—*
First class ..... 2,800 3,400
Second class ..... 1,700 2,000
*Superintendent of Water Works—*
In charge of maintenance, operation and extension of water works system ..... 5,000 7,000
*Assistant Water Superintendent—*
In charge of domestic distribution system ..... 3,600 4,800
*Water Works Mechanical Engineer—*
In charge of pumping plants of city water works ..... 3,600 4,800
*Superintendent of Meters and Services—*
In charge of installation of water meters, service pipes and meter reading ..... 3,600 4,800
*Superintendent of Water Filtration—*
In direct charge of city water purification plant ..... 3,600 4,800
*Superintendent of Streets—*
In charge of maintenance of streets, including street cleaning and refuse collection..... 3,600 4,800
*Superintendent of Sewers—*
In charge of sewer maintenance, repairs and new connections... 3,600 4,800
*Superintendent of Sewage Disposal—*
In direct charge of city water purification plant ..... 3,600 4,800
*Superintendent of Refuse Disposal—*
In charge of municipal refuse destructor or incinerator ..... 3,600 4,800

SCHEDULE 5—CITIES FROM 300,000 TO 500,000 POPULATION.

*Department Commissioner—*
Commissioner of department of public works or head of special commission as on transportation, sewage disposal, additional water supply or other similar work of the first magnitude....10,000 15,000
*City Engineer—*
In charge of all engineering work of the city except water works.... 9,000 12,000
*Deputy City Engineer—*
Principal assistant to city egineer assigned to special work ..... 6,000 7,500
*Division Engineer—*
In charge of a major subdivision of the city engineering work such as pavements, sewers, bridges, etc. ..... 4,200 6,000
*Office Engineer—*
In direct charge of design, reporting to division engineer..... 3,800 4,200
*Assistant Engineer—*
First grade ..... 3,400 4,000
Second grade ..... 2,900 3,300
Reports to division engineer direct and acts as chief of party, squad leader or construction superintendent.
*Testing Engineer, Chemist or Bacteriologist—*
In charge of testing work in construction material laboratory, water purification plant or sewage treatment plant ..... 3,400 4,000
*Instrumentman* ..... 2,400 3,200
*Draftsman—*
First grade ..... 2,400 3,200
Second grade ..... 1,800 2,100
*Inspector on Construction Work—*
First class ..... 2,800 3,400
Second class ..... 1,700 2,000
*Rodman, Chainman and Tracer*.... 1,700 2,000
*Superintendent of Water Works—*
In charge of maintenance, operation and extension of water works system ..... 7,500 10,000
*Assistant to Water Superintendent—*
In charge of domestic distribution system ..... 4,800 6,000
*Water Works Mechanical Engineer—*
In charge of pumping plant of city water works ..... 4,800 6,000
*Superintendent of Meters and Services—*
In charge of installation of water meters, service pipes and meter reading ..... 4,800 6,000
*Superintendent of Water Filtration—*
In direct charge of city water purification plant ..... 4,800 6,000
*Superintendent of Streets—*
In charge of maintenance of streets, including street cleaning and refuse collection ..... 4,200 6,000
*Superintendent of Sewers—*
In charge of sewer maintenance, repairs and new connections... 4,200 6,000
*Superintendent of Sewage Disposal—*
In direct charge of sewage disposal plant operation ..... 4,800 6,000
*Superintendent of Refuse Disposal—*
In charge of municipal refuse destructor or incinerator..... 4,200 6,000
*City Managers—*
Where a City Manager is employed his position shall be defined as the administrative head of the municipality, appointed by its legislative body, and his duties make him the head of the service, safety, health and welfare departments of the city. The following salaries are proposed for City Managers:
Schedule 1 ..... 5,000 7,500
Schedule 2 ..... 7,000 8,500
Schedule 3 ..... 8,500 10,000
Schedule 4 ..... 10,000 12,000
Schedule 5 ..... 12,000 15,000
These schedules not to operate to reduce any existing salaries.

## Engineers Help Teachers to Secure Raise

The American Association of Engineers has entered the fight to secure additional compensation for teachers. The following notable men are on the National Committee: Professor Daggett, University of North Carolina; Dean F. L. Bishop, University of North Carolina; Dean F. L. versity of Pittsburgh; Professor Bass, University of Minnesota; Dean Marston, Iowa State College; Professor Swain of Harvard University; Dr. Capen of American Council of Education; Professor Tilden of Yale University (Chairman) and Consulting Engineers: A. W. Johnson, Chicago; George C. Mason, Portland, Oregon; Baxter L. Brown, St. Louis; H. P. Eddy, Boston, Mass.; H. Z. Osborne, Jr., Los Angeles, and C. W. Hubbell, Detroit, Michigan.

## Engineers' Compensation Bill in Congress

After presenting numerous facts showing the reduction in compensation suffered by Government Engineers, the American Association of Engineers has presented through Senator Calder of New York, an amendment to the Rivers and Harbors Bill providing for a flat twenty-five per cent increase in salary to all grades of engineers doing river, harbor and fortification work. This Bill has passed the House and is now in the Senate.

### Mending Rubber Hose

(Reprinted by Request.)

Rubber hose, on construction work, invariably develops leaks through rough handling. Leaks are a nuisance and often hose is thrown away that, with a little trouble, could be easily repaired. The usual method of repairing leaks is by wrapping them with a piece of cloth, usually a cement bag, worth 10 cents, and the result is never satisfactory. A good and lasting repair job is very simply made. At an electrician's supply store buy a roll of ordinary tar insulating tape and roll of rubber insulating tape. To mend the leak stop the water and wipe off the outside of the hose. Wrap the rubber tape around the hose over the leak and about one inch each way, letting the edges of the tape overlap. One thickness is enough. The rubber tape is soft and sticks to the hose. Then wrap rubber tape with the tar tape to protect it from wear.

### Los Angeles Engineers Elect New Leaders

The recent election of officers in the Los Angeles Chapter of the American Association of Engineers resulted in the selection of the following: Messrs. A. L. Harris, President; H. Z. Osborne, Jr., Vice-President; R. H. Holbrook. Secretary; W. D. Armstrong, Myron Hunt, F. C. McMillan and F. H. Olmsted, Directors.

### National Engineers' Convention

The sixth annual convention of the American Association of Engineers was held in St. Louis, May 10th.

Delegation representing Eighteen thousand engineers took action on important policies affecting the Engineering Profession.

### Tacoma Engineers Advocate Metric System

The Tacoma Chapter of the American Association of Engineers is actively advocating the adoption of the Metric System in America. Other engineering societies are requested to take similar action.

### Engineers Recognized on Railroad Labor Board

Through the efforts of the American Association of Engineers the Railway Professional Engineers have been rated as subordinate officials and given representation on the Railroad Labor Board.

### Spokane Engineers Unite

The Spokane Chapter of the American Association of Engineers was organized on April 3rd. Engineers E. C. Scharf acted as Chairman and V. W. Gamble as Secretary. Fifty members were present.

### Long Beach Engineers Unite

A local chapter of the American Association of Engineers has been established at Long Beach, California.

### Book Review

"Landscape Architecture: A Comprehensive Classification Scheme for Books, Plans, Photographs, Notes and other Collected Material," by Professor Henry Vincent Hubbard of Harvard University and Miss Theodora Kimball, librarian of the School of Landscape Architecture at Harvard University.

This pamphlet is of the same size, and is organized in the same general way as the City Planning classification published by Professor J. S. Pray and Miss Kimball in 1913. In the field of Landscape Architecture there are now enough libraries and practitioners to make this present classification very valuable, and it is fortunate that the experience of the largest and most active library in the subject, that of the School of Landscape Architecture at Harvard, is thus put at the public disposal.

The classification scheme has already been tried out successfully at Harvard, and an examination of the pamphlet will show you that it is of interest to architects as outlining a closely allied field, and a profession increasing in the West, and will be useful for architects' offices.

### New Garage Catalog

STANLEY ESPECIALLY DESIGNED GARAGE HARDWARE. Published by the Stanley Works, New Britain, Conn.

This is a new catalog complete with items of interest to the prospective garage builder. Illustrations and suggestions to aid architects and builders are given together with full size details of hangers, locks, hinges, brackets, etc. With reference to its hardware equipment the following intorductory is given:

Good hardware equipment makes a useful garage. No matter how fine the architecture may be, unless the hardware operates easily and satisfactorily, your garage is practically useless.

Stanley Works Garage Hardware is designed for use where strength and service are essential.

Ideal garage doors swing on hinges, fit closely and do not allow drafts to chill the air inside the garage.

The majority of Stanley Works garage hinges are ball bearing. This eliminates all possibility of the joints wearing down, a common fault of doors hung on the usual type of hinges.

### Teredos Damage Wood Piles

Teredos, or "the woodpeckers of the sea," are held by officials of different industrial plants along the Carquinez straits near Martinez, California, to be responsible for the destruction of wharves valued at over $600,000.

One thousand feet of wharf belonging to the Union Oil Company collapsed recently after the piles had been eaten away by the sea animals. The mass of timber was completely carried away and was not recovered by tugs until it had almost reached the San Francisco bay.

One of the slips of the Southern Pacific Company at Port Costa has also been destroyed, resulting in a loss of $100,000, it is said. In replacing the decayed piles, engineers are incasing the new ones with concrete to prevent their destruction by the teredos.

All of the docks of the California-Hawaiian Sugar Company at Crockett are being rebuilt and the piles are to be coated with concrete.

# The Contractor

BUILDING CONSTRUCTION, BRIDGES AND ROAD WORK

## The Public and the Building Contractor**

By O. G. HUGHSON*

BY "the public," for the purposes of this discussion, we do not mean that portion of the general public that toils nor spins not and is not interested in the subject of building only as it provides shelter, nor that portion that toils and spins but in some other line than in the bulding industry.

What we mean by the term "public" as used in this connection, is the building public, or the public while it builds or as it builds and is therefore interested with the building contractor in an individual and personal business relationship for the time being.

By the "building contractor," we do not mean the railroad builder, nor the constructor of sewers and highways. We do not mean the broker contractor, nor the commission contractor, nor the curb stone —carpet bag—contractor, nor the cost plus man who has his thought and interest so riveted on the "plus," that like the Cyclops —the fabled giant blacksmith who toiled for the old god Vulcan on the Isle of Sicily —they have only one eye in their heads and that sees but their own gain.

What we mean by the building contractor, in this connection, is the average man who contracts for a certain sum to erect for the owner or his agent a certain building or structure by a certain fixed date and according to certain more or less definite plans and specifications and puts his own money and time and skill into the doing of it.

We are speaking of the relationship between this man and the party for whom the building or structure is being or to be erected.

What then is this relationship? In the first place, is not the contractor employed by contract, to do this particular piece of work? Is this employment not the first step in the operation? Does he not become thereby an employee of the building public just as surely as though hired by the day? And by this act is not his business status fixed as that of an employee? If so, does not his loyalty, and his obligation run to the owner for whom the work is being done? Is there any one, any interest to whom or to which he is more obligated than to the owner? Does not his service become therefore a special service and is not this building construction contractor placed by the very nature of his calling or vocation in the same category of personal service with the law or medicine as far as his relationship goes?

However that may be, the fact is unescapable that before the building contractor can become anything else, economically or industrially speaking, he must become and he does become an employee. Before he invests in tools, in equipment, in materials, he must seek a job or one must seek him, and if he acquires these things with no job on hand it is in anticipation of getting one. He does not purchase a stock for resale—he is not a dealer—he does not build for the trade—he is not a manufacturer. He is employed by the building public for a certain purpose and to perform a certain special and personal service—as special and personal as the employment of a surgeon or a lawyer. The only difference being in the kind and manner of his employment and in the proportionate size of the fee for services.

Suppose the general public should adopt the system of competitive bidding when a surgeon is needed to cut off a leg, or a doctor to handle the family ailments, or a lawyer to plead a case? And yet much of the work done for the public by surgeon or doctor or lawyer, is done by employees and assistants. The relationship is the same in the contractor's as in their case and it is not the same in the case of the manufacturer, or the shop man, or of the dealer.

The point we are seeking is that the relationship of the building contractor to the building public is of such a peculiar and intimate nature that the contractor is by that very fact set apart by a distinct line of demarcation into a class by himself—a special or personal service class or calling, of an exceptionally high character.

If this is conceded it solves several interesting problems and first, it clears up his duty to the building public for it becomes a paramount obligation on his part, supported by ethics as high as those in medi-

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* Secretary-Treasurer General Building Contractors' Association and Manager Builders' Exchange, Portland.

** Address delivered before Northwest Master Builders' Convention, Portland, March 26, 1920.

cine or the law, to see to it that the public is not defrauded and that the service rendered shall be of the very highest type compatible with the price agreed upon. If a man wanted a leg taken off and he took his bids on the job and after juggling the bids of ten or fifteen surgeons he found one, with a rusty handsaw and a pocket knife, who had just blown into town and who put in a low bid to get a bowl of soup or a place to sleep, and let the job to him he could not expect a strictly first class job, or if he did expect it he would not get it. It is much like that in building contracting, but the duty and obligation of the contractor rim nevertheless to the building public, and to the extent of his ability and opportunity he should protect those who employ him for they are his clients and he owes it to them and to them alone.

Adverse legislation, building codes, housing codes, ordinances, zoning systems, etc., should receive his most careful attention, and not for himself but for and in behalf of the building public—of those who employ him.

It should be his constant care to see that the prices of building materials are in accord with solid business principles and that greed and profiteering are held in check as far as possible and this also not for himself but for those for whom he works. He should not hesitate to use his collective purchasing power wherever needed to correct abuses of this sort and to stabilize so far as may be material costs, to the end that the building investor may know him as a safe man to do business with and his town a safe town in which to spend his money in building.

Recognizing this special employee relationship of the building contractor also largely solves his relationship with his mechanics, his assistants, his labor, and they become co-workers with him, employees of the owner through him and under him, to carry on where he cannot for various reasons. And it here again becomes his duty in the interest of the building public to stabilize labor conditions and wages so that the owner may safely and reasonably be assured that the work once started will go through. And he owes this also to himself, for while the owner loses by needless delays, the contractor must suffer any advance in wage, after the contract is signed. It becomes of supreme importance to the building public that the employing contractor shall see to it that the public's interest is safeguarded in this connection and as far as is compatible with what is fair and just to the men who do the actual work.

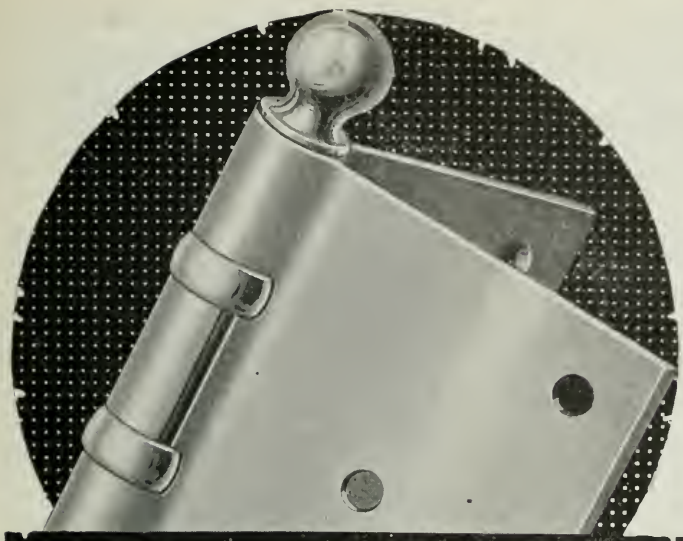
He should not be carried away nor allow himself to become involved in any issue that, in the furtherance of the interests of others, would admit an injury to be done those to whom he looks for employment and who are dependent upon and trust their affairs to him.

When he is employed to erect a building and the contract is duly executed there is just one thing for the building contractor to do and that is to build the building, to fulfill the contract and turn the completed work over to the owner at the date agreed upon. And he should allow nothing outside of the acts of God or matters which he absolutely cannot control to prevent him from it.

His interest lies therefore, first of all, with those for whom he builds, and, second, with those who do the actual work, and, third, with those who furnish him materials, the manufacturers and dealers.

There should be in his mind at all times a clearly drawn line of interest that runs to each of these in their order and he has no business to allow himself to become allied with affairs that are not within his scope or calling and in which, by reason of his small number, lack of financial standing, or business experience, he becomes but a hopeless minority while others, to further their own ends, do his thinking for him and often force upon him conditions in the making of which he had no voice and which, to others may bring but temporary loss or inconvenience, but to him may result in ruin.

The thought we wish to bring out is that building construction is a noble calling, that



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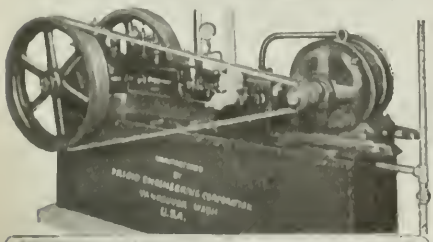

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building is in an exclusive class, a class by itself, that the operating motive is far above mere merchandising or manufacturing for gain. That long after the work of statesmen have been forgotten, long after peoples and nations have perished, the work of the builder's hands shall stand on the hill tops of human experience and the chiseled marble and towering steel continue to speak in deathless eloquence of the world's master builders.

We wish to bring out the thought that because of his weakness in numbers and the abominable system of competitive bidding that has been loaded upon him that the contractor has felt the need of allying himself with other and stronger business forces to give him the support he has felt he needed, when, if through the past fifty years he had sought assiduously to unite in one solid, properly articulated body, all the forces that center in and derive their support from the business of building he could dominate where now he occupies but a small minor place in the affairs of men or even in his own affairs.

Of a naturally retiring and modest disposition, he has allowed himself to be dictated to, and his business methods and policies shaped by, outside interests until today the building contractor is a sort of a business pariah and feels, and often justly so, that every man's hand is against him until with his back to the wall, his, the most noble of all callings, has devolved into but a bitter fight for existence.

What we have in mind is that the builders of the Northwest should first of all line up with each other until by personal contact and acquaintance they find they can trust each other as well as they may any other class of men—this we are accomplishing slowly through our local organizations and through this Northwest Master Builders' Association. Second, the builder should get it out of his head that the architect is anything else than a builder, that in some way he belongs more to the owner for whom he draws the plans than to those who execute them. He should, at once, in every city, arrange for joint meeting with them, get their view points and get down to work together in the interest of the building public. This can be done—it should be done. Splendid results will immediately follow. Fear of the general public alone prevents, but before the year 1920 is ended this will be done in Portland.

The building contractor should recognize the plumbing and electrical contractors' organizations, as equals and form a working contact with them and also with every sub or specialty contractors' organization all along the line. There should be no enmity here and it is only short sighted stupidity that keeps them apart as they now are. Their interests are overlapping, interlocking and common and everything is to be gained by forgetting the small issues and false pride, that keep them apart and from

Plate R-2219½-T Hajoca No. 404 "Quietflow" de luxe Vitreo China Syphon Jet Closet.

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establishing an actual working relationship. It is ridiculous to hear a general contractor speak disparagingly of the sub or specialty contractor when if he were compelled to make a living and support his family on the work they do he would starve to death. And this association work too, should be done in the interests of the building public as well as in the interests of better work and better results.

And the logic of this proposition does not stop here but carries on through to the mechanics themselves. But what a howl goes up when this thought is broached. Contractors who can't lay a brick, contractors who cannot cut a mitre, contractors who don't know one varnish from another, contractors whose only stock in trade is a lead pencil, a paper pad, a little money in the bank and a credit rating and wad of nerve, roar their opposition when it is suggested that maybe, in the interests of the building public, it might be wise for them to meet as industrial equals, the mechanics who make possible the contractor's success but give ready but illogical acceptance to joining forces with those who are in no way connected with the building business and among whom, by reason of small numbers, and a lacking of the gift of gab, they stand no more show of putting anything really worth while for the building public across than a snowball in hell.,

The building public has some rights, has the right to make some demands, and one is that when it wants a building erected the contractor should erect it, where it is wanted, and it is the business of the contractor to do the work and all efforts, all his organization efforts should be with this one thing in view or the contractor has missed his calling.

The general public has the right to demand that the lawyers shall run their own business, that the doctors shall run theirs, that the dentists shall run theirs, so long as they are run in the mutual interest of themselves and their patrons and clients. Why, then, when it comes to building, may not those who build demand that the builders run their own affairs and deliver the goods? The building public is entitled to the strength and assistance that would result from the complete organization of all those forces that enter into building construction—organized along proper lines—and the entire divorcement from entangling alliances that delay or tie up the work.

When there is a chance to make a good investment, house a good tenant; fill a real need for offices or warehouse, the investor is usually concerned in just one thing above all others, and that is to get the building up and producing, and he can't see why he should be tied up and made to suffer while the contractors, the men they wish to employ, are off their job fighting some other employer's battles or more concerned apparently in settling some labor trouble than they are putting up his building. We are living in a new day, in a day of organizations, when all worth while forces are organized to take care of their own interests and some of them seem to feel it incumbent upon them to take care of the other fellow's also. And everybody, organized or not, from capitalist and banker to the man who wants to build a one-room bungalow in Goose Hollow is absolutely sure he knows all about the building game and can tell the contractors all about how it should be done, what prices to charge and what wages to pay, while probably not for one solid hour in their whole lives have they seriously considered any of the real problems that confront the man who makes a business of building.

Everybody not only seems able to advise the contractor as to how his business should be conducted but they often attempt to force him to conduct it as they wish, and by reason of his peculiar relationship with those building and his failure to line up his own forces they usually succeed.

The great test question that should be shot at these gratuitous advisers of the builders when they come butting in is this: "Are you a builder? If you are we will sit right down and talk it over, for we want your idea. If not, this is our busy day, you must call later."

What we are trying to say is that the builders ought to handle their own business, in their own way, and not allow themselves to be treated as common laborers, nor salesmen; that they are big enough, brainy enough, capable enough to do it when they adopt the good old gospel dictum that, "He that is not with me is against me."

It is exceedingly hard not to have the suspicion that the motives of the general public, as distinguished from that part of the public concerned in the actual erection of buildings, are not altogether disinterested, but that by reason of the basic nature of the work of building they desire to so control basic values as to work out in their less basic enterprises their own gain even though their methods by which they seek control will result in great loss if not ruin to many a builder.

It is manifestly unfair that the conditions under which buildings are erected should obtain in shop and mill and factory and no intelligent contractor but would know that it could not be successfully done. It is just as absurd that mill and shop and factory conditions should govern in the work of building construction. It must be conceded that a great gulf separates them. Then why not stay on our side of the gulf and seek to handle our problems for the building public in our own way? We don't wish to run things over on the other side. May we not question all attempts at dictation from all others than builders themselves? If so, then is there not immediate need for enrollment into this organization of every builder in the Northwest?

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ATLAS WHITE

### Wins Paris Course Prize

Mr. Ernest Wiehe, of the San Francisco Architectural Club, has been advised that he has been the successful competitor for the Paris prize offered by the Minister of Public Instruction and Fine Arts in France to American students. The prize includes a two and a half year course in the Architectural School of the National Beaux Arts Society and $3,000 to defray expenses. Coincident with the announcement of the prize comes the invitation to Mr. F. A. Chapman, to take the final examination for the Paris Prize for next year.

### Architects Form Partnership

Messrs. C. E. Noerenberg and H. S. Johnson have formed a partnership under the firm name of Noerenberg & Johnson. Offices are maintained at 762 Pacific Electric building, Los Angeles. They are architects for the new ten-story office building to be erected at Eleventh street and Broadway for the Los Angeles Railway Company. The firm will specialize in heavy industrial construction and Class A buildings. Both members are graduates of the University of Illinois.

### Store Building

Mr. Mathew O'Brien, architect in the Foxcroft building, San Francisco, has prepared plans for a one-story reinforced concrete store building to be built on Eddy street, west of Jones, San Francisco, for Mr. Alvin Selig. The cost is estimated at $25,000.

### Reopens San Francisco Office

Mr. Edward G. Garden, architect, for the last three years with the engineering department, Standard Oil Company, California, announces his resignation from that service and the re-opening of his own offices for the practice of architecture at rooms 781-783, Flood building, San Francisco.

### Garage at Vale, Oregon

Mr. W. W. Lucius, architect in the Lewis building, Portland, Oregon, is preparing plans for a one-story garage to be built at Vale, Oregon, for Harvey & Ricker of that place.

### Consolidation Effected

Consolidation of the Builders' Exhange and the Building Industries Association of San Francisco has finally been effected, a majority of members of both organizations having voted for amalgamation. A state federation of builders' exchanges will be formed, now that there is a central organization in San Francisco, according to the contractors of the Bay City.

### W. H. Weeks Enters Los Angeles Field

Mr. W. H. Weeks, architect, 75 Post street, San Francisco, and Mr. Robert H. Orr, architect, 1301 Van Nuys building, Los Angeles, have formed an association for the practice of architecture. Mr. Weeks will become identified with Mr. Orr in Los Angeles, and Mr. Orr with Mr. Weeks in San Francisco in certain lines of work.

### Fresno Church

Mr. Norman F. Marsh, 211 Broadway Central Building, Los Angeles, is preparing plans for a new church building for Fresno Methodist Episcopal Church. The building will cover an area 100x125 ft., and is estimated to cost $100,000.

### Large Tacoma Residence

Messrs. Sutton and Whitney, architects in the Lewis building, Portland, have been commissioned to prepare plans for a large residence in Tacoma for Mr. H. N. Tinker, president of the Puget Sound Bank & Trust Co. of that city.

### Attended Institute Convention

Messrs. A. F. Rosenheim and J. J. Backus, of Los Angeles, represented the Southern California Chapter at the convention of the American Institute of Architects in Washington, D. C.

### Bank Building

Messrs. DeYoung & Roald, architects, in the Spalding building, Portland, have completed plans for a modern bank building for the Ridgefield State Bank.


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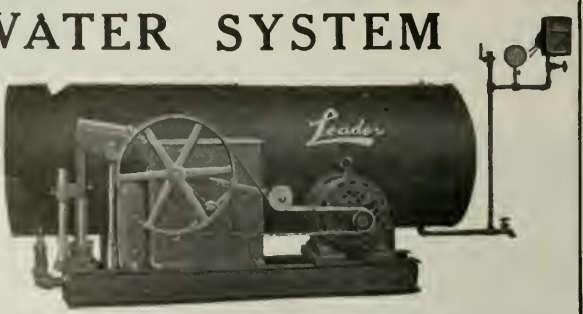


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## New Factory of the United States Metal Products Company

The accompanying pictures show the new factory, office building and warehouse of the United States Metal Products Company, one of San Francisco's most prominent building industries. The plant is at 326-338 Tenth street, between Harrison and Folsom. The main building covers ground area 137x187-6 and is two stories high with the front portion arranged for executive offices of the company, the second floor, containing the drafting room and private offices of Mr. P. W. Dreusike, president, and Mr. O. B. Dreusike, secretary-treasurer. The rear portion of the building has a large machine shop, assembling room and department for the manufacture of steel sash. In designing the building special care was taken to provide ample light and as a result daylight penetrates every corner and crevice of all the shops. The pictures give some idea of the capacity of the plant for handling the company's output.

The United States Metal Products Company succeeded to the business of the old San Francisco Cornice Company, one of the pioneer institutions of the city. The company specializes in steel sash and doors and hollow metal Underwriters' windows. It has the exclusive handling of the famous Saino fire doors, which are an all-steel and asbestos product tested and labeled by the Underwriters' Laboratories.

Some of the more recent installations of fire doors are the Ainsley Packing Company, Campbell; Schucke Canning Company, Niles; Zellerbach warehouse, San Francisco; Independent Paper plant, Stockton. Steel sash and doors have been supplied for buildings throughout the Coast too numerous to mention, many of them being large office buildings and public edifices, including the San Francisco City Hall and Hall of Justice.

NEW FACTORY OF THE UNITED STATES METAL PRODUCTS COMPANY, SAN FRANCISCO

CUTTING AND FORMING SHOP FOR SHEET METAL WORK, UNITED STATES METAL PRODUCTS COMPANY

MACHINE AND CUTTING SHOP FOR STEEL WINDOWS, UNITED STATES METAL PRODUCTS COMPANY

ASSEMBLING SHOP AND SHEET METAL WINDOW DEPARTMENT, UNITED STATES METAL PRODUCTS COMPANY

### Defective Construction Reported by Oregon Fire Marshal

The urgent need of enforcing regulations directing the proper use of materials in building construction is again strikingly shown in the second annual report of the State Fire Marshal of Oregon, who gives the following as a record of defects found by the Oregon state inspectors during the year ending March 1919: Defective wiring, 229; floors and walls unprotected from stoves, 191; defective pipes, stoves and flues, 125; found chimneys on brackets, 482; exposed and unprotected openings, 131.

The fact that 482 chimneys were found supported on brackets is an indication that a most primitive method of construction still exists and again emphasizes the fact that proper building regulations are most essential in all cities, large and small, for fire prevention.

### Hotel Improvements

Mr. Myron Hunt, 1107 Hibernian Building, Los Angeles, is preparing working plans for extensive alterations to the Belvedere Hotel at Santa Barbara, including the erection of two or more frame and hollow tile bungalows, a hollow tile garage, 70x150 ft. to house 60 machines, changes in the lobby and lower floors of the hotel proper, and a renewal of the mechanical plant of the hotel.

### Golden Gate-Taylor Theatre

The "Golden Gate-Taylor" will, in all likelihood, be the name of the "Orpheum Junior Circuit" theatre to be erected at once in San Francisco from plans by Mr. G. A. Lansburgh.

The new policy of the Orpheum circuit is to name the new playhouse from the intersecting streets on which they are located.

### Apartments and Bank Building

Messrs. Sutton and Whitney, Lewis building, Portland, Oregon, are preparing plans for a four-story brick apartment house to cost $300,000, and to be built at Ogden, Utah, for Mr. D. C. Eccles. The same architects have made plans for a $400,000 bank building to be erected at Tacoma for the First National Bank of that city.

### Architects Meet in San Diego

The Southern California Chapter of the American Institute of Architects held its May meeting at the U. S. Grant Hotel, San Diego on Saturday, May 15. Elaborate plans were carried out by the San Diego architects for the entertainment of their guests.

### Standard Oil Building

The Lindgren Company of San Francisco has been awarded the contract to build a 21-story Class A office building at Bush and Sansome streets, San Francisco, for the Standard Oil Company.

### Electrical Company Expands

Architects and the electrical trade in San Francisco and the Bay cities will be interested in the announcement that Mr. L. Siebert, for the past fourteen years associated with the Drendell Electrical & Manufacturing Company, and Mr. J. Gensler, formerly manager of the Electrical Construction Company of San Francisco and Oakland, have taken over the business and good will of the Drendell Company and have established offices and factory in a new reinforced concrete building at 1345-1353 Howard street, San Francisco. The building is one story and covers considerable ground area. It has been built to answer the needs of a growing enterprise and has offices in front and a spacious shop in the rear. The company will specialize in switch boards, panel boards, knife switches, cabinets and theatre installations. With the many new theatres being planned in California the company should find no difficulty keeping busy. The Demco products, heretofore manufactured by the Drendell Company, will be produced by the new company, and the trade is assured prompt and efficient service.

### Interchangeable Steel Bulletin Boards

A very satisfactory Bulletin Board which may be purchased outright at much less cost than on the rental plan, is being manufactured at 1106 Franklin street, Oakland, by the Go-Sign and Letter Company. The boards are suitable for office buildings, churches, schools, cafeterias, banks and auto sales shops. The boards may be placed either outside or inside of a building. The frames are made of oxidized copper, mahogany, circassion walnut, enamel, brass and fumed oak, while the background is treated with imported enamel, baked to a temperature of 400 degrees. Regardless of the amount of wear, they are guaranteed not to scratch. So simple is the arrangement for lettering that a child can operate the boards. A catalog will be mailed free on application.

### Stockton Architects Busy

Messrs. Davis, Heller & Pierce, architects and construction engineers of Stockton have been retained by the Stockton Board of Education to supervise construction of the new school buildings there, together with additions to old ones, under the recently authorized bond issue. The same firm is preparing plans for a store and office building for the San Joaquin Investment Company and which is to cost in the neighborhood of $50,000. This firm is also making plans for a concrete office building for the Western States Gas & Electric Company.

When business is good advertising is an opportunity. When business is bad advertising is a necessity.

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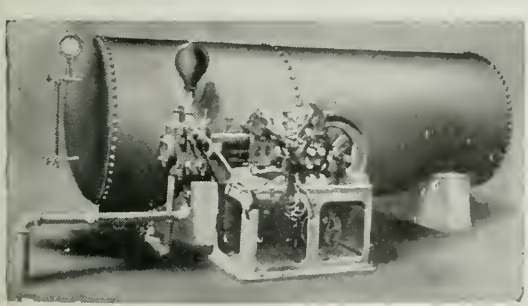
Thos. J. Coleman,
Manager



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### $400,000 Bank Building

Messrs. Sutton & Whitney, architects, Lewis building, Portland, and with offices also in Tacoma, have been commissioned to prepare plans for a $400,000 bank building for the Tacoma National Bank, Tacoma, Washington.

The building will be of Italian renaisance type of architecture, equivalent to a forty-story structure 50x120 feet and constructed of reinforced concrete with exterior walls of stone.

### Vallejo Hotel

Plans are being completed by Mr. George E. Perry, architect and Heller & Wilson, engineers, San Francisco, for the Admiral Hotel, a six-story building to be erected at Sonoma and Virginia streets, Vallejo, at an outlay of $250,000.

### School Building at Crockett

Mr. W. H. Weeks has been commissioned to prepare plans for a new school building at Crockett for the Carquinez School District. Bonds will be voted in May.

### Will Design Armory

The Walla Walla armory commission has selected Messrs. Osterman & Siebert of Walla Walla as the architects for the new armory.

*Residence of W. W. Orcutt, 103 So. Mariposa St., Los Angeles, Calif., H. F. Dierker, Architect.*

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PACIFIC BUILDING — SAN FRANCISCO

HEATING VENTILATION WIRING ILLUMINATION

# Present Cost of Building Materials*

## With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, May 20, 1920.
All prices f. o. b. cars San Francisco or Oakland.

### American Institute of Architects' Fees

New work—6 per cent minimum basis. High class residence work—10 per cent as a minimum.
Alterations—7 to 10 per cent as a minimum basis.

**Bond**—1½% amount of contract.

**Brickwork**—
Common, $38.00 per 1000 laid.
Face, $70.00 per 1000 laid.
Common, f. o. b. cars, $18.00 plus cartage.
Face, f. o. b. cars, $45.50 per 1000, carload lots.
12x12x3 in., 10¼c. per square foot.
12x12x4 in., 11¾c. per square foot.
12x12x6 in., 16¼c. per square foot.
Hod carriers, $7.50 per day.
Bricklayers, $10.00 per day.
Lime—$2.40 per bbl.; per ton of 2000 lbs., $18.50.

**Composition Floors**—30c. per sq. ft.
Klingstone, 27c. to 65c. per foot.

**Concrete Work** (material at San Francisco bunkers)—

| | |
|---|---|
| No. 3 rock | $2.25 per yd. |
| No. 4 rock | 2.40 per yd. |
| Niles pea gravel | 2.50 per yd. |
| Niles gravel | 2.25 per yd. |
| Niles top gravel | 2.50 per yd. |
| City gravel | 2.25 per yd. |
| River sand | 1.40 per yd. |
| Bank sand | 75c. per yd. |

**Monterey Sand**—$1.50 per ton, car load lots, f. o. b. Monterey.
Fan-shell-beach, $3.00 per ton.
Cement (f. o. b. cars)....$3.88 per bbl.
Rebate for sacks, 25c. each.
Atlas "White" ....$9.50 per bbl.
Medusa cement .... 9.50 per bbl.
Forms ....$60.00 per M
Wage—
Laborers ....$6.00 per day
Concrete workers .... 7.50 per day
Cement finishers .... 9.00 per day

**Dampproofing**—
Two-coat work, 30c. per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $6.00 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $9.00 per day.

**Electric Wiring**—$8.00 to $15.00 per outlet.
WAGE—Electricians, $9.00 per day.

**Elevators**—
Prices vary according to capacity, speed and type. Consult elevator companies.

**Excavation**—
$2.00 per yard.
Teams, $12.00 per day.
Trucks, $30.00 to $40.00 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Cost of ornamental iron, cast iron, etc., depends on design.

**Flooring**—
Klingstone sanitary fireproof flooring, $55 per ton on job.

**Fire Escapes**—
Ten-foot balcony, with stairs, $100.00 per balcony.

**Glass**—
(Consult with manufacturers.)
21 ounce, 25c. per square foot.
Plate, $2.00 to $5.00 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 40c. per square foot.
Note.—Add extra for setting.
WAGE—Glaziers, $9.00 per day.

**Heating**—
Average, $3.25 per sq. ft, of radiation.
WAGE—Steamfitters, $10.00 per day.

**Lumber**—
Common (at building), $49.00 per 1000 (average).
Common O. P. (select), $98.00 per 1000 (average).
Flooring—

| | |
|---|---|
| 1x3 No. 1 | $123.00 per 1000 |
| 1x3 No. 2 | 115.00 per 1000 |
| 1x4 No. 1 | 118.00 per 1000 |
| 1x4 No. 2 | 115.00 per 1000 |
| 1x4 No. 3 | 108.00 per 1000 |
| 1x6 No. 1 | 123.00 per 1000 |
| 1x6 No. 2 | 120.00 per 1000 |
| 1¼x4 and 6 No. 1 | 123.00 per 1000 |
| 1¼x4 and 6 No. 2 | 118.00 per 1000 |
| Slash grain, 1x4 No. 1 | 92.00 per 1000 |
| Slash grain, 1x4 No. 3 | 87.00 per 1000 |
| No. 1 common run to T. & G. | 69.00 per 1000 |
| Lath | 10.50 per 1000 |

Shingles—

| | |
|---|---|
| Redwood, No. 1 | $1.60 per bdle. |
| No. 2 | 1.50 per bdle. |
| Red cedar | 1.85 per bdle. |

(Add cartage to above)

Hardwood Floors—
Maple floor (laid and finished), 38c. per foot.
Factory grade floors (laid and finished), 30c. per foot.
Oak (quartered, finished), 57c per foot.
Oak (clear), 41c. per foot.
Oak (select), 39c. per foot.
Oak, quartered, sawed, clear, select, 48c.
WAGE—Floor layers, $9.00 per day.
In flooring the usual grades of oak used are

| | Grades | Quartered Sawed | Plain Sawed |
|---|---|---|---|
| 5/16" | Clear | " | " |
| | Select | " | " |
| 1"x3"-13/16"x2¼" | Clear | " | " |
| | Select | " | " |
| | No. 1 (very little used) | | |

⅞-inch plain oak....58c.
⅞-inch quarter sawed....70c.

* NOTE.—For country work add freight and cartage to prices given.

**Hardwood Floors (not laid)—**

| | | Per M ft. |
|---|---|---|
| 13/16x2¼" face | Clear quartered oak | $470.00 |
| | Select quartered oak | 360.00 |
| | Clear plain oak | 350.00 |
| | Select plain oak | 315.00 |
| | Clear maple | 225.00 |
| | Clear maple—white | 255.00 |
| 13/16x3¼" face | Clear maple | 230.00 |
| 1 1/8x2¼" face | Clear maple | 235.00 |
| ⅜x2" face | Clear quartered oak | 310.00 |
| | Select quartered oak | 260.00 |
| | Clear plain oak | 260.00 |
| | Select plain oak | 225.00 |
| | Clear maple | 180.00 |
| | Clear beech | 175.00 |
| | Clear red beech | 215.00 |

**Veneered Panels—**

| 24x60 in., ¼ in., 3-ply, 1 side: | Per ft. |
|---|---|
| Ash | 26c. |
| Hungarian Ash | 39c. |
| Birch | 26c. |
| Curly Birch | 39c. |
| Elm | 24c. |
| Jenisero (Genezero) | 37c. |
| Southern Red Gum (plain fig.) | 32c. |
| Qtd. Southern Red Gum | 39c. |
| Hawaiian Koa | 39c. |
| Maple | 24c. |
| Birdseye Maple | 47½c. |
| Mahogany | 39c. |
| Oregon Pine | 19½c. |
| Plain Oak | 31c. |
| Quartered Oak | 39c. |
| Walnut | 39c. |

**Millwork—**

O. P., $180 per 1000. R. W., $180 per 1000.
Double hung box frame windows (average) with trim.....$10.50 each
Doors, includ. trim (single panel) ..... 15.00 each
Doors, including trim (five panel) .....$12.00 each
Screen doors ..... 5.50 each
Window screens ..... 3.50 each
Medicine cases ..... 5.00 each
Cases for kitchen pantries seven feet high, per lineal foot ..... 10.00 each
Dining room cases same price, if not too elaborate,
Flag poles, per foot..... 1.50

**Labor—**

Rough carpentry, warehouse heavy framing, $16.00 per 1000.
For smaller work, average, $23.00, $30.00 per 1000.
Wage—Laborers, $6.00 per day.
Carpenters, $8.50 per day.

**Marble—**

| | |
|---|---|
| Columbia | $1.65 sq. ft. |
| Alaska | 1.65 sq. ft. |
| Tennessee | 2.25 sq. ft. |
| Verde Antique | 4.25 sq. ft. |

**Painting—**

Two-coat work, 35c. per yard.
Three-coat work, 45c. per yard.
Whitewashing, 5c. per yard.
Cold water paint, 10c. per yard.
Klingstone finish, 18c. per lb., barrel lots.
Wage—Painters, $8.50 per day.

**Patent Chimneys—**

| | |
|---|---|
| 6-inch | $1.50 lineal foot |
| 8-inch | 1.75 lineal foot |
| 10-inch | 2.25 lineal foot |
| 12-inch | 3.00 lineal foot |

**Pipe Casings**—$8.00 each.

**Plastering—**

Interior, on wood lath, 70c. per yard.
Interior, on metal lath, $1.25 per yard.
Exterior, on brick or concrete, $1.00 per yard.
Portland White, $1.25 to $1.50.
Interior on brick or terra cotta, 65c to 70c per yard.
Exterior, on metal lath, $2.25 to $2.50 per yard.
Wood lath, $10.50 at yard per 1000.
Metal studding, $1.00 to $1.25 per yard.
Metal studding, with lath and plaster, $2.00 per yard.
Klingstone stucco, $37.50 per ton, on job.
Galv. (metal lath), 38c. and up per yard, according to gauge.
Lime, f. o. b. warehouse, $2.40 per bbl.
Hardwall plaster, $21.00 per ton f. o. b. warehouse.
Klingstone stucco, on galvanized metal, $1.60 to $2.25 per yard.
Wage—Hod carriers, $8.50 per day.
Plasterers, $10.00 per day.

**Plumbing—**

From $70.00 per fixture up, according to grade, quantity and runs.
Wage—Plumbers, $10.00 per day.

**Reinforcing Steel—**

Base price for less than car load lots, $5.50 per 100 lbs.
Car load lots, $5.25 per 100 lbs., f. o. b. San Francisco. (Mill delivery.)

**Roofing—**

Five-ply tar and gravel, $7.50 per square for 30 squares or over.
Less than 30 squares, $8.00 per square.
Tile, $35.00 per square.
Redwood shingle, $13.00 per sq. in place.
Cedar shingle, $13.00 per square in place.
Reinforced Pabco roofing, $8.25 per square.
Wage—Roofers, $8.00 to $9.00 per day.

**Rough Hardware—**

Nails, per keg, $7.10 base and very scarce.
Deafening felt, $170.00 per ton.
Building paper, P. & B.,
1 ply, $6.50 per 1000 ft. roll.
2 ply, $9.75 per 1000 ft. roll.
3 ply, $14.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.50 per hank 100 feet.
Common, $1.75 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

**Skylights—**

Copper, $1.25 a square foot (not glazed).
Galvanized iron, 50c. a square foot (not glazed).
Wage—Sheet metal workers, $9.00 per day.

**Store Fronts—**

Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.35 per lin. foot.

**Structural Steel**—$150.00 per ton.

This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.

**Steel Sash—**

Fenestra, from S. F. stock, 45c. per sq. ft.
Fenestra, Plant shipment, 40½c. per sq. ft.
(Includes mullions and hardware.)

**Tile—**

White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $2.00 per sq. foot, laid.

**Windows—**

Metal, $2.00 a square foot.

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Pacific Coast Sales Office—Monadnock Building, San Francisco; other Branch Offices in New York, Chicago, Pittsburgh, Cleveland, Detroit, St. Louis, Cincinnati, Atlanta, Washington, D. C. and Buffalo.

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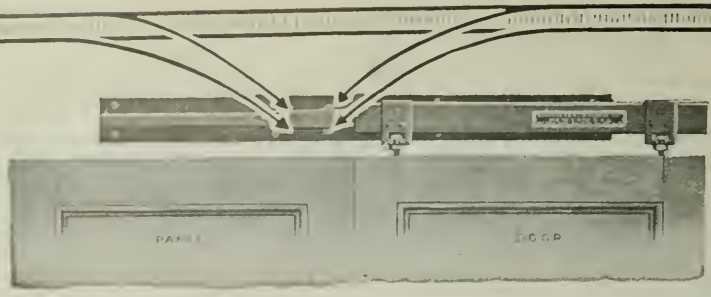

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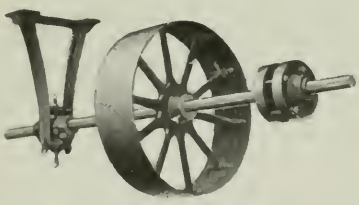

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**Statement of the Ownership Management Circulation, etc.**

(Required by the Act of Congress of August 24, 1912),

Of The Architect and Engineer, published monthly at San Francisco, California, for April 1st, 1920.

State of California,
City and County of San Francisco.—ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared W. J. L. Kierulff, who, having been duly sworn according to law, deposes and says that he is the Manager and Publisher of The Architect and Engineer, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher.....W. J. L. Kierulff
627 Foxcroft Bldg., San Francisco
Editor .....F. W. Jones
627 Foxcroft Bldg., San Francisco
Business Manager .....W. J. L. Kierulff

2. That the owners are: W. J. L. Kierulff, 627 Foxcroft Bldg., San Francisco; F. W. Jones, 627 Foxcroft Bldg., San Francisco; L. B. Penhorwood, 627 Foxcroft Bldg., San Francisco.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in said stock, bonds, or other securities than as so stated by him.

W. J. L. Kierulff, Manager.

Sworn to and subscribed before me this 25th day of March, 1920.

[SEAL] N. E. W. Smith,
Notary Public in and for the City and County of San Francisco, State of California.
(My commission expires April 12, 1921.)

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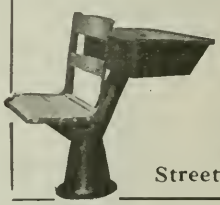

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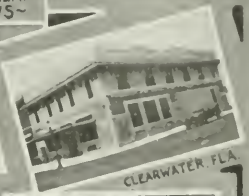
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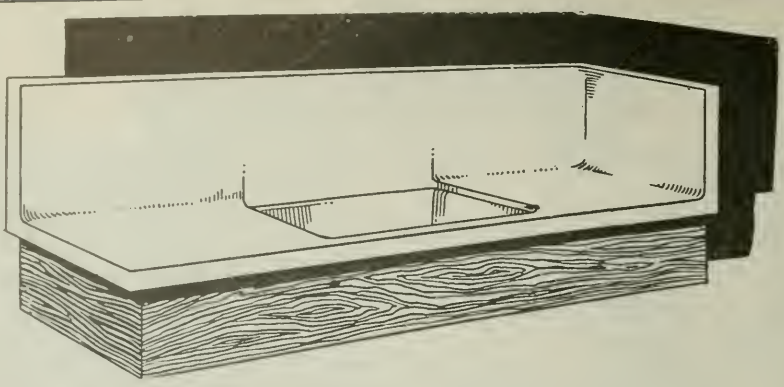

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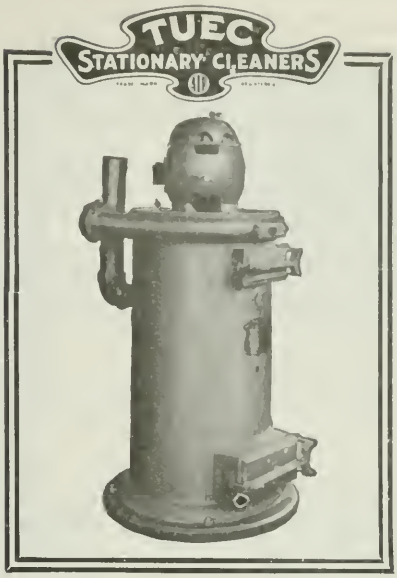


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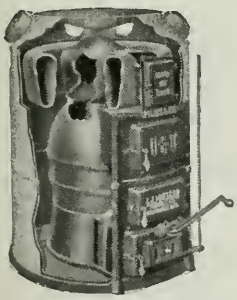

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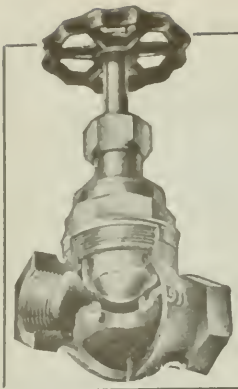

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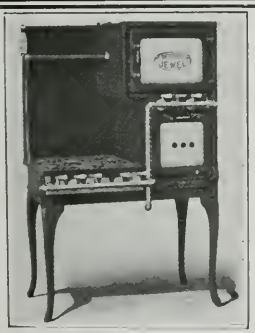

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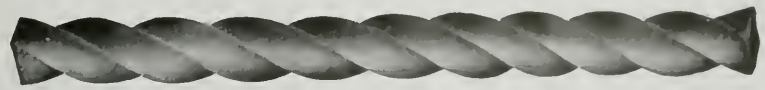

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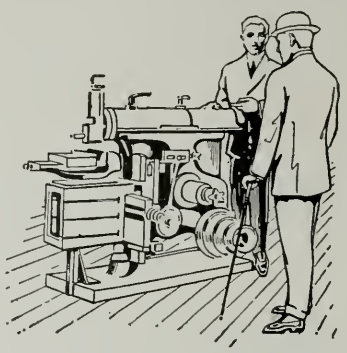

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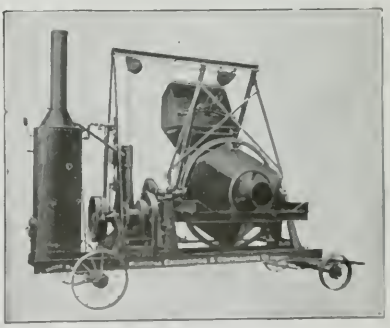

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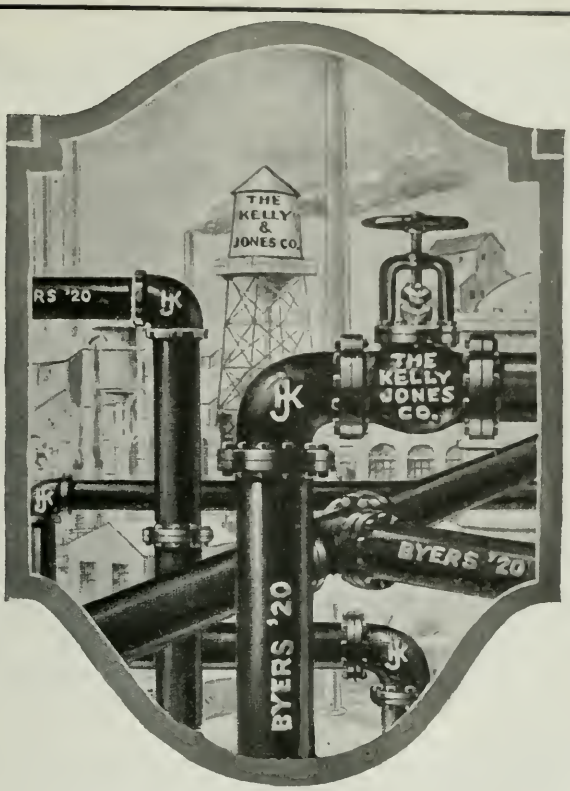


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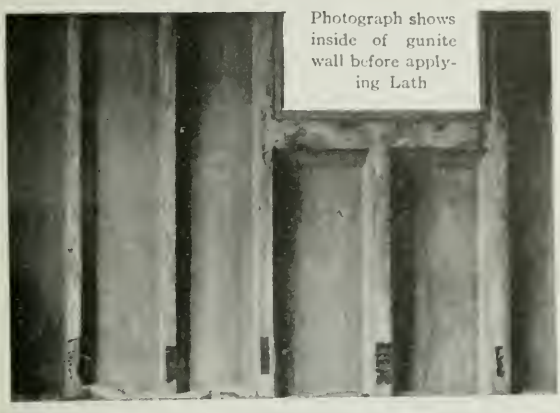

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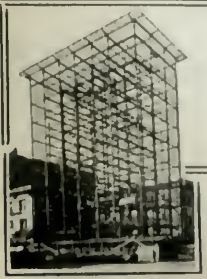

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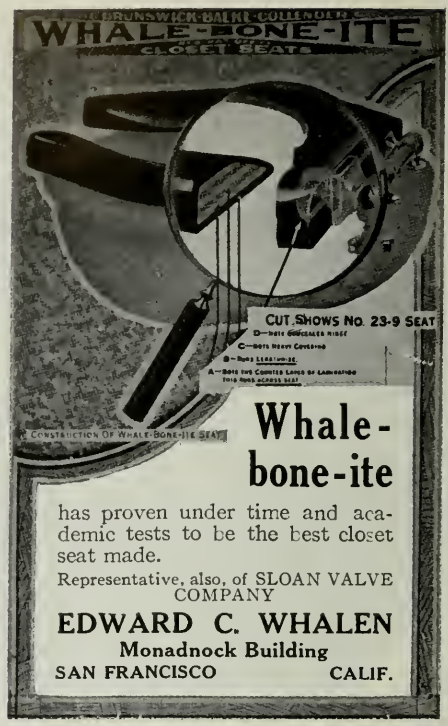


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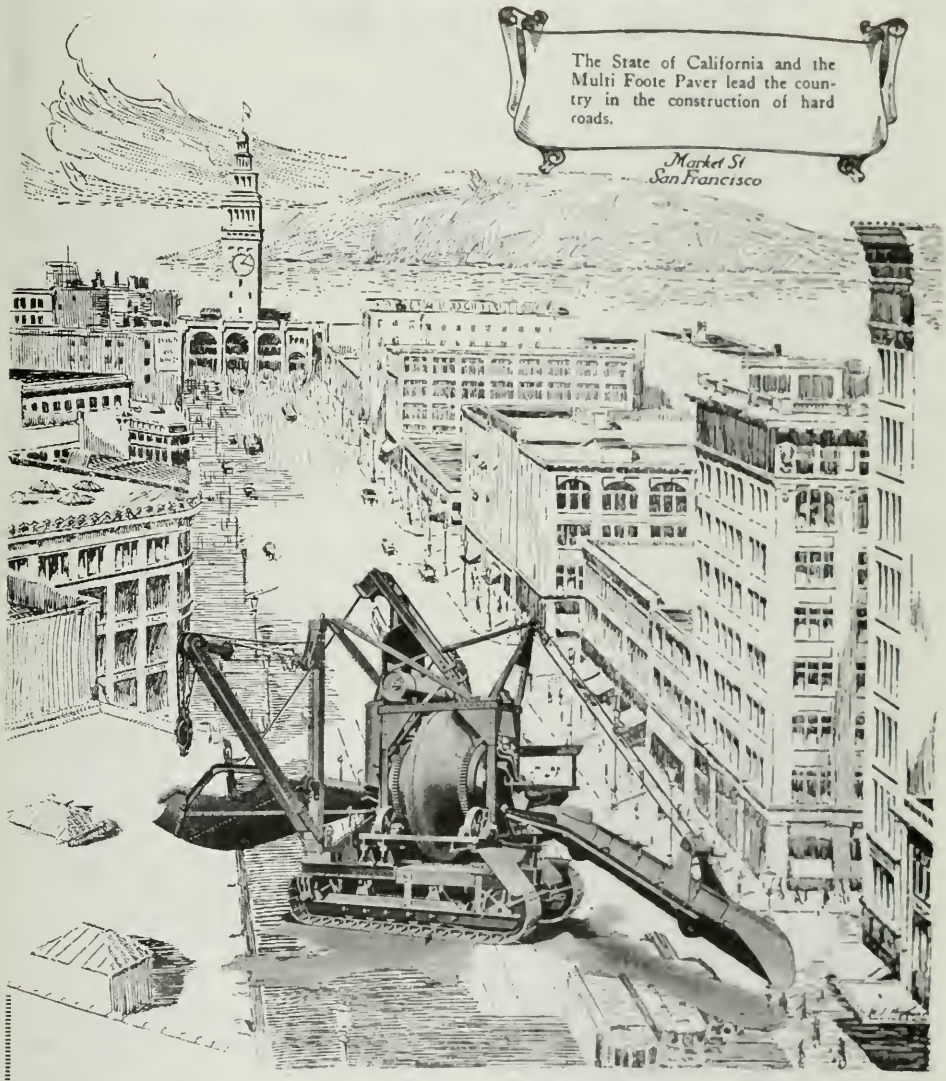
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**ABLE OIL PAINT,** made in soft Kalsomine tints—a practical article for WALLS, CEILINGS, Etc. Economical and Durable. Agency TAMM & NOLAN COMPANY'S high grade Varnishes and Finishes, made on the Pacific Coast to stand our climatic conditions.
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SEATTLE
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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

BUILDING MATERIAL, SUPPLIES, ETC.
Pacific Materials Co., Underwood Bldg., San Francisco.
Waterhouse-Wilcox Co., 523 Market St., San Francisco.

CABINET MAKERS
Home Manufacturing Company, 543 Brannan St., San Francisco.
Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Company, 64 Rausch St., San Francisco.

CARPETS
W. & J. Sloane, 216-228 Sutter St., San Francisco.

CASEMENT WINDOW HARDWARE
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

CASTINGS
Dow-Herriman Co., 140 Howard St., San Francisco.

CEMENT
Atlas Portland Cement Co., New York and Chicago. (See advertisement for Coast Distributors.)
Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.
Standard and Santa Cruz Portland Cement Companies, Crocker Bldg., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
Old Mission Portland Cement Co., Mills Building San Francisco.

CEMENT EXTERIOR FINISH
Concreta, sold by W. P. Fuller & Co., all principal Coast cities.
Glidden Stucolor Liquid Cement Coating. The Glidden Company, 123 Hooper St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies Oakland, Los Angeles, Portland, Tacoma, Spokane; and Pacific Building Materials Co., 525 Market St., San Francisco.
The Paraffine Companies, Inc., 34 First St., San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
Bay State Brick and Cement Coating, manufactured by Wadsworth, Howland Co., Boston, Mass.
James Hambley & Son, Distributors, San Francisco and Los Angeles.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Paraffine Paint Co., 34 First St., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING
Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco
Glidden Concrete Floor Dressing. The Glidden Company, 123 Hooper St., San Francisco

CEMENT GUN
Cement Gun Construction Company of California, 701 Balboa Bldg., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS
Fink & Schindler, 218 13th St., San Francisco.
Mullen Manufacturing Company, 64 Rausch St., San Francisco.
Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL
Haslett Warehouse Co., 310 California St., San Francisco.

CLAY PRODUCTS
Livermore Fire Brick Works, 604 Mission street, San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS
T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
Vulcan Iron Works, San Francisco.

COMPRESSED AIR CLEANERS
United Electric Co., Canton, O., mfr. of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

CONCRETE CONSTRUCTION
Barrett & Hilp, Sharon Bldg., San Francisco.
Clinton Construction Co., 140 Townsend street, San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Palmer & Petersen, Monadnock Bldg., San Francisco.
Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE MIXERS
Austin Improved Cube Mixer. Stuart S. Smith, 625 Market Street, San Francisco.
Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.
Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.
Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.

CONCRETE REINFORCEMENT
United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.

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N. F. Hesseltine, California Manager. C. H. Gray, Assistant Manager.

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE REINFORCEMENT (Continued)
Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Steel bars sold by W. S. Wetenhall Co., 450 Irwin St., San Francisco.
Triangle Mesh Fabric. Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., 527 Tenth St., San Francisco.

CONDUITS
Garnett, Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
Barrett & Hilp, Sharon Bldg., San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
R. W. Littlefield, 357 12th St., Oakland.
Unit Construction Co., Phelan Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
Herbert Beckwith, 323 Newton Ave., Oakland.
A. D. Collman, 110 Jessie St., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.
Monson Bros., 1907 Bryant St., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
McLeran & Peterson, Hearst Bldg., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.

CONTRACTORS' EQUIPMENT
Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
Harron, Rickard & McCone, Townsend St., San Francisco.
Garfield & Co., Hearst Bldg., San Francisco.
Smith, Booth-Usher Co., 60 Fremont St., San Francisco; 228 Central Ave., Los Angeles.

CONTRACTORS' INSURANCE
Bankers & Shippers Insurance Co. of New York, Insurance Exchange Bldg., San Francisco.

CONVEYING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.

CORK INSULATION
Van Fleet Freear Co., Sharon Bldg., San Francisco.

CRUSHED ROCK
Coast Rock & Gravel Co., Call Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Glidden's Liquid Rubber. The Glidden Company, 123 Hooper St., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Imperial Waterproofing, mfrd by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS
Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
Stanley Works. New Britain, Conn. John Rountree, agent, Monadnock Bldg., San Francisco.
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 166 7th St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS
Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
M. E. Ryan, Redwood City, Calif.
Rex Electric & Engineering Co., 253 Minna St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
Severin Electrical Company, 185 Stevenson St., San Francisco.
Spott Electrical Co., Sixteenth and Clay Sts., Oakland.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
Sierra Electric Company, 515 Market St., San Francisco.
Garnett, Young & Co., 612 Howard St., San Francisco.
Butte Electrical Equipment Co., 530 Folsom St., San Francisco.
Safety Electric Company, 56-65 Columbia Square, San Francisco.

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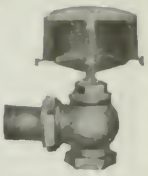


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ELECTRIC SUPPLIES & EQUIPMENT—Cont.
- Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.
- R. J. Davis, District Sales Agent, Century A. C. Motors and Fans, 171 Second St., San Francisco.

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 166 7th St., San Francisco.

ELEVATOR EQUIPMENT
- Elevator Supplies Company, Inc., 186 Fifth St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.

ELEVATOR DOOR HARDWARE
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

FANS AND BLOWERS
- John Ringius, 252 Townsend St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
- Standard Fence Construction Co., 77 O'Farrell St., San Francisco, and 310 12th St., Oakland.

FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco, 830 S. Los Angeles St., Los Angeles.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.
- Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE INSURANCE
- Bankers & Shippers Insurance Co., Insurance Exchange Bldg., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- Grinnell Company, 453 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.
- Asbestos Paints. The Glidden Company, 123 Hooper St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco.

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
- Inlaid Floor Company, 600 Alabama St., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
- Jas. A. Nelson, 517 Sixth St., San Francisco.

FUEL OIL SYSTEMS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco

FURNITURE—SCHOOL, CHURCH, OFFICE, HOUSE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker Fuller Desk Co., 677 Mission St., San Francisco.
- F. W. Wentworth & Co., 539 Market St., San Francisco.
- Western Office Equipment Co., 467 Market St., San Francisco.
- W. & J. Sloane, 216-228 Sutter St., San Francisco.

GALVANIZED IRON WORK
- Power & Pike Co., 22-24 Main St., San Francisco.
- James A. Nelson, 517 Sixth St., San Francisco.

GARAGE HARDWARE
- The Stanley Works, New Britain, Conn., represented in San Francisco, Los Angeles, Seattle by John T. Rawntree, Inc.


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## ARCHITECTS' SPECIFICATION INDEX—*Continued*

GARAGE HARDWARE—Continued.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES AND INCINERATORS
Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 745 Folsom St., San Francisco, sole agents for California.
Kerner Incinerator Co., 77 O'Farrell St., San Francisco.
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

GAS STEAM RADIATORS—FUMELESS, ETC.
Clow Gas Steam Radiators, F. A. Hamilton, Agent, 101 Rialto Bldg., San Francisco.
Ra-Do Fumeless Gas Radiators, manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.
Corbin hardware, sold by Palace Hardware Co., 581 Market St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Inlaid Floor Co., 600 Alabama St., San Francisco.
H. N. McNab, 2307 17th Ave., Oakland.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC—GAS
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC.
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Knittle-Cashel Co., Inc., 1820 Ellis St., San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Moline Heat, Hobart Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
James A. Nelson, 517 Sixth St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Mechanical Engineering & Supply Co., 908 7th St., Sacramento.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
O. M. Simmons Co., 58 Sutter St., San Francisco.

HOLLOW TILE BLOCKS
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
Ralphs-Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 745 Folsom St., San Francisco.
Chicago Signal Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.

HOTELS
St. Francis Hotel, Powell, Geary and Post Sts., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.

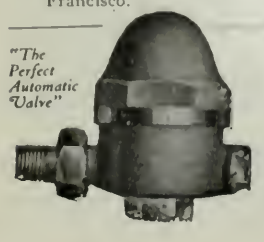
INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
Ebonite Boiler Kote, sold by California Plastic Products Co., 521 Sheldon Bldg., San Francisco.

INCINERATORS
Kerner Incinerator Co., 77 O'Farrell St., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.

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Phone Franklin —6365— MARBLE OFFICE AND MILLS: 535-565 North Point St., SAN FRANCISCO, CAL.

## ARCHITECTS' SPECIFICATION INDEX—Continued

Sonnenschein Bros., 470 Sutter St., San Francisco.
F. A. Taylor & Co., 251 Post St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.
Freeman Art Shop, 386 Sutter St., San Francisco.
W. & J. Sloane, 216 Sutter St., San Francisco.

KITCHEN CABINETS
Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

KITCHEN EQUIPMENT
James A. Nelson, 517-19 Sixth street, San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, Call-Post Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
Jas. F. Smith, 273 Minna St., San Francisco.

LATHING MATERIAL
Pacific Materials Co., 525 Market St., San Francisco.
Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
W. & J. Sloane, 216-228 Sutter St., San Francisco.

LOCKERS—STEEL
George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
California Redwood Association, 216 Pine St., San Francisco.
Dudfield Lumber Co., Palo Alto, Cal.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Sunset Lumber Company, First and Oak Sts., Oakland.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

METAL DOORS AND WINDOWS
Fire Protection Products Co., 3117 20th St., San Francisco.
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 330 Tenth St., San Francisco.

MILL WORK
Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.

MOTORS AND FANS
R. J. Davis, Dist. Sales Agent Century Motors and Fans, 171 Second St., San Francisco.

OIL BURNERS
American Standard Oil Burner Company, Berkeley.
Fess System Co., 220 Natoma St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
G. E. Witt Co., 862 Howard St., San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

OFFICE EQUIPMENT
Western Office Equipment Co., 467 Market St., San Francisco.
F. W. Wentworth & Co., 539 Market St., San Francisco.

ORNAMENTAL IRON AND BRONZE
California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

KNITTLE-CASHEL CO., Inc.
HEATING CONTRACTORS
STEAM HEATING
HOT WATER HEATING
VENTILATING
POWER PLANTS
GENERAL PIPE WORK
REPAIRING
1820-22 Ellis Street, San Francisco
Phone West 964

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

OVERHEAD CARRYING SYSTEMS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

PAINT FOR CEMENT
Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
The Paraffine Companies, Inc., 34 First St., San Francisco.
Anti-Rust Coatings. The Glidden Co., 123 Hooper St., San Francisco.
Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Wadsworth, Howland Co., makers of Bay State Brick and Cement Coating, Boston, Mass. Hambley & Son, Distributors in San Francisco and Los Angeles.

PAINTING, TINTING, ETC.
I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
California Paint Company (see advertisement on page 139).
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
The Glidden Company of California, 123 Hooper St., San Francisco.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.
Palace Hardware Co., 581 Market St., San Francisco.

PANELS AND VENEER
White Bros., Fifth and Brannan Sts., San Francisco.

PARTITIONS—FOLDING AND ROLLING
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PAVING BRICK
California Brick Company, Niles, Cal.

PENCILS
Eberhard Faber, Monadnock Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE COVERINGS
The Paraffine Companies, Inc., 34 First St., San Francisco.

PLASTER CONTRACTORS
A. Knowles, Call-Post Bldg., San Francisco.
MacGruer & Simpson, 540 Call-Post Bldg., San Francisco.
James F. Smith, 273 Minna St., San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
A. Lettich, 365 Fell St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Jas. B. Clow, plumbing, Rialto Bldg., San Francisco
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Wm. F. Wilson Co., 328 Mason St., San Francisco.
Whale-bone-ite Fixtures, sold by E. C. Whalen, 325 Monadnock Bldg., San Francisco.

POWER LAWN MOWERS
H. U. Carter Motor Co., 52 Beale St., San Francisco.

POWER PLANTS
Knittle-Cashel Co., Inc., 1820 Ellis St., San Francisco.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.

PUMPS
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
Dow-Herriman Company, 140 Howard St., San Francisco; factory, Petaluma.
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
California Hydraulic Engineering & Supply Co., 70 Fremont St., San Francisco.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Dow-Herriman Co., 140 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

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District Sales Agent
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SAN FRANCISCO, CALIF.

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, Monadnock Bldg.

REVERSIBLE WINDOWS
Hauser Window Company, 157 Minna St., San Francisco.

ROOFING CONTRACTORS
Western Roofing Co., Inc., 420 15th St., San Francisco.

ROOFING AND ROOFING MATERIALS
Bender Roofing Company, Monadnock Bldg., San Francisco.
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
The Vulcanite Roofing Co., Texas and 16th Sts., San Francisco.
H. H. Robertson Co., Hobart Bldg., San Francisco.

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
Pacific Materials Co., 525 Market St., San Francisco.

SAND
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK
Jas. A. Nelson, 517 Sixth St., San Francisco.
Power & Pike Co., 22-24 Main St., San Francisco.

SHINGLE STAINS
Bass-Hueter Paint Company, all principal Coast cities.
Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francicco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.
Argonaut Shingle Stains. The Glidden Co., 123 Hooper St., San Francisco.

SINKS—COMPOSITION
Petrium Sanitary Sink Co., Fifth and Page Sts., Berkeley.

SKYLIGHTS
H. H. Robertson Co., Hobart Bldg., San Francisco.
Jas. A. Nelson, 517 Sixth St., San Francisco.

STATIONERY AND SUPPLIES
Schwabacher-Frey Stationery Co., 609 Market St., San Francisco.

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
General Boilers Co., 332 Monadnock Bldg., San Francisco.

STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Western Pipe & Steel Co., 444 Market St., San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

STEEL REINFORCING
Badt-Falk & Co., Call-Post Bldg., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Truscon Steel Co., 527 Tenth St., San Francisco.
W. S. Wetenhall Co., 725 Second St., San Francisco.

STEEL ROLLING DOORS
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., agents, Underwood Bldg., San Francisco.
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles.

STEEL SASH
Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
U. S. Metal Products Company, 330 Tenth St., San Francisco.

STEEL WHEELBARROWS
Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

SUMP AND BILGE PUMPS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES
Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.

TANKS FOR OIL, GASOLINE, KEROSENE, ETC.
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

TANKS—REDWOOD
Redwood Manufactures Co., Hobart Bldg., San Francisco.

TELEPHONE AND ELECTRIC EQUIPMENT
Bittmann & Battee, 745 Folsom St., San Francisco.
Direct Line Telephone Co., 320 Market St., San Francisco.

STEEL SASH — FIRE DOORS — SHEET METAL
Kalamein, Copper and Bronze Doors and Trim — Sheet Metal Work of Every Description
FIRE PROTECTION PRODUCTS CO.
3117-3119 TWENTIETH STREET, Near Harrison, SAN FRANCISCO. Phone Mission 2607

## ARCHITECTS' SPECIFICATION INDEX—*Continued*

THEATER AND OPERA CHAIRS
C. F. Weber & Co., 365 Market St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

THERMOSTATS FOR HEAT REGULATION
Johnson Service, Rialto Bldg., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

TILE FOR ROOFING
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

TRANSMISSION MACHINERY
Meese & Gottfried Co., San Francisco, Los Angeles and Portland.
P. H. Reardon, 57 First St., San Francisco.

VACUUM CLEANERS
United Electric Company, Canton, O., manufacturers of Tuec Cleaners, sold in California by San Francisco Compressed Air Cleaning Co., Stockton and Sutter Sts., San Francisco.

VALVES—PIPES AND FITTINGS
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
Sloane Valves, sold by E. C. Whalen, 325 Monadnock Bldg., San Francisco.
Grinnell Co., 453 Mission St., San Francisco.
O. M. Simmons Company, 58 Sutter St., San Francisco.
H. Mueller Mfg. Co., 635 Mission St., San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
California Paint Company, 1797 Twelfth St., Oakland.
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.
The Glidden Company, 123 Hooper St., San Francisco.
Standard Varnish Works, 55 Stevenson St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VENTILATORS
H. H. Robertson Co., Hobart Bldg., San Francisco.
Power & Pike Co., 22-24 Main St., San Francisco.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.

WALL BEDS, SEATS, ETC.
American Automatic Lock & Lift Co., 72 Fremont St., San Francisco. (Display at 77 O'Farrell street.)
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.

WALL BOARD—Continued
"Liberty" Wall Board, manufactured by Key Hold Plaster Lath Co., 148 Hooper St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Velva-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.
W. & J. Sloane, 216-228 Sutter St., San Francisco.
Uhl Bros., San Francisco.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Bay State Brick & Cement Coating, manufactured by Wadsworth, Howland Co., Boston; Hambley & Son., Distributors for Northern and Southern California.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE CEMENT
"Atlas White," see coast agencies, page 127.
"Medusa White," sold by Pacific Materials Co., Underwood Bldg., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass Hueter Paint Co. All principal Coast cities
Velvet White Enamel. The Glidden Company, 123 Hooper St., San Francisco.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOW SHADES
W. & J. Sloane, 216-228 Sutter St., San Francisco.

WINDOWS, REVERSIBLE, CASEMENT, ETC.
Hauser Window Co., 157 Minna St., San Francisco.
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Clinton Wire Lath, sold by L. O. Norris, 140 Townsend St., San Francisco.

WIRE FENCE
Standard Fence Co., 310 12th St., Oakland.

WOOD MANTELS
Fink & Schindler, 218 13th St., San Francisco.
Mangrum & Otter, 827 Mission St., San Francisco.

MOLINE HEAT
Hobart Building San Francisco
TELEPHONE SUTTER 3818

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**Mott Company of California**

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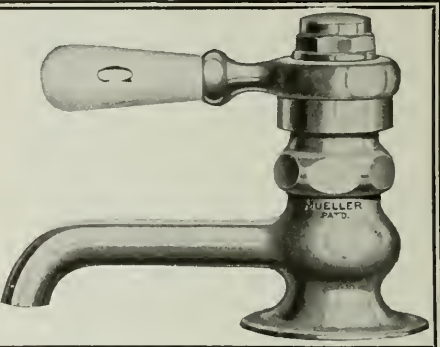


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# Automatic Fire Sprinklers

Protect your building and business from destruction by fire and reduce your Insurance Rate.

## Pacific Fire Extinguisher Co.

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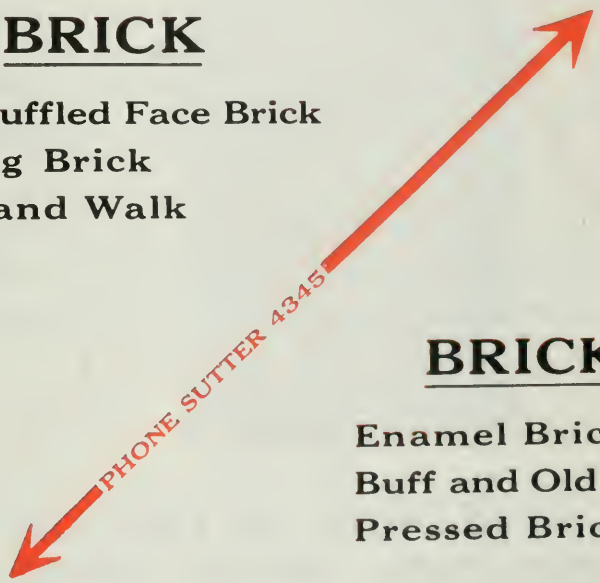


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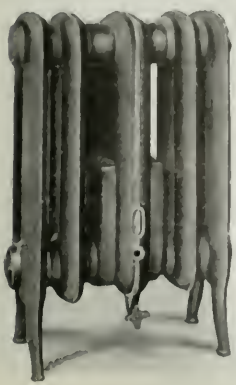

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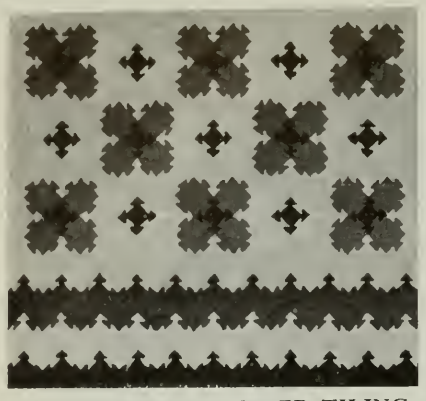

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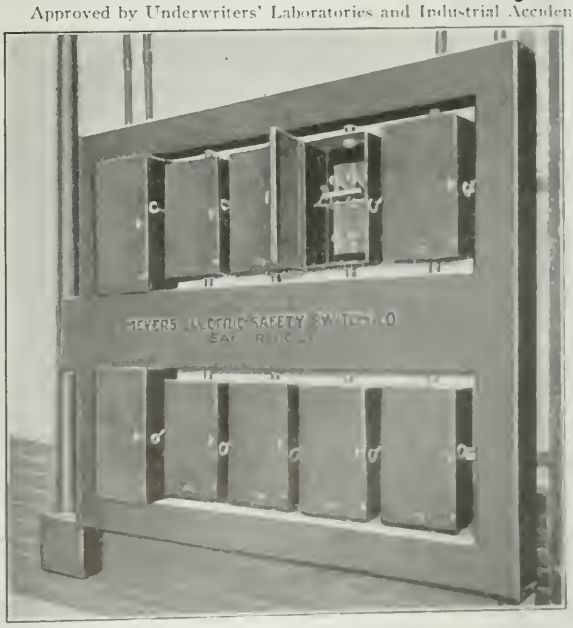

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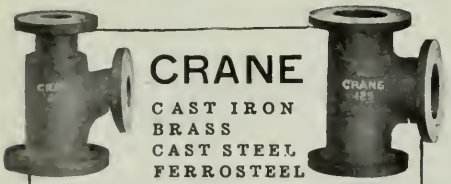

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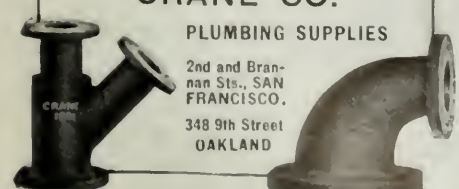

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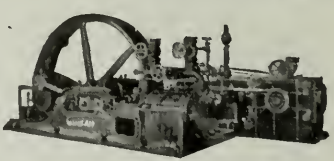

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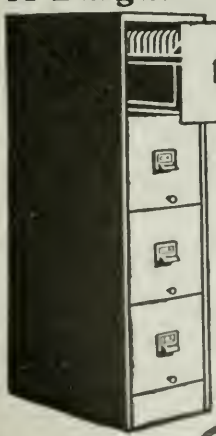

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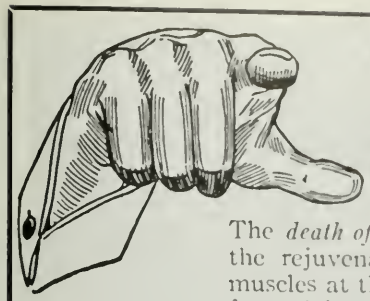

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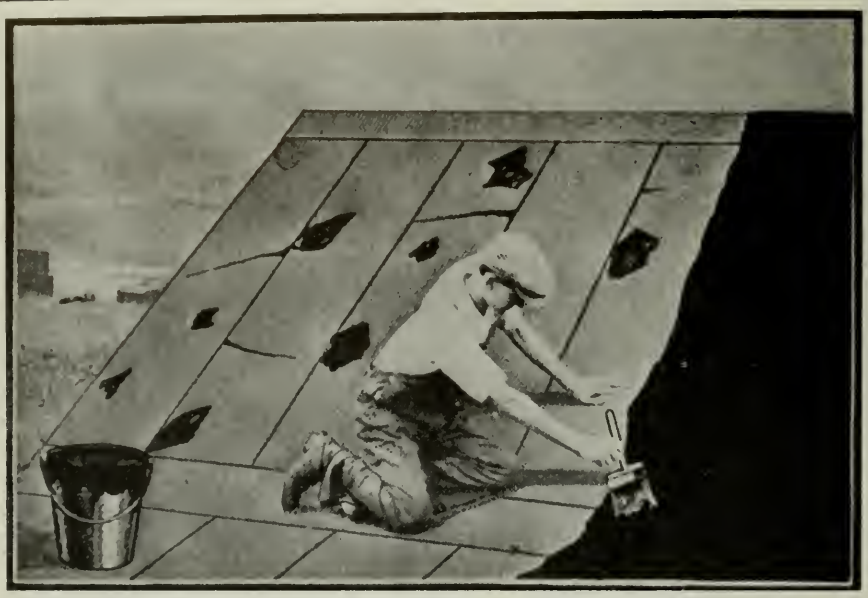

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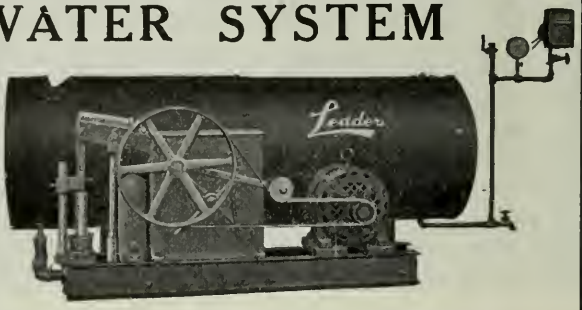


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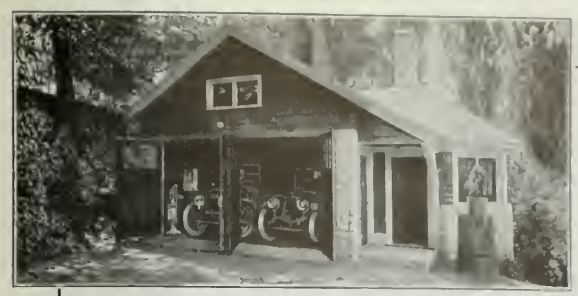

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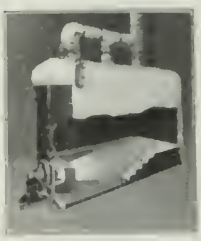

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# THE ARCHITECT AND ENGINEER

Vol. LXI. SAN FRANCISCO, JUNE, 1920 No. 3

## The Architecture of Small Cities

By WILLIAM WADE

WITH the growth of the interior cities of California there has been awakened in recent years a gratifying spirit of pride which has manifested itself not only in the upkeep of streets and parks and public grounds, but in the improved style of buildings and the general treatment of their surroundings.

It seems that the day has passed when the visitor to an interior town or city is destined to look upon ramshackle affairs that never enjoyed so much as a resemblance to good architecture. Occasionally one would find a county or city building that suggested an expenditure of a pile of the public's money but as these structures were usually put up by politicians the question of beauty seemed not to have suggested itself.

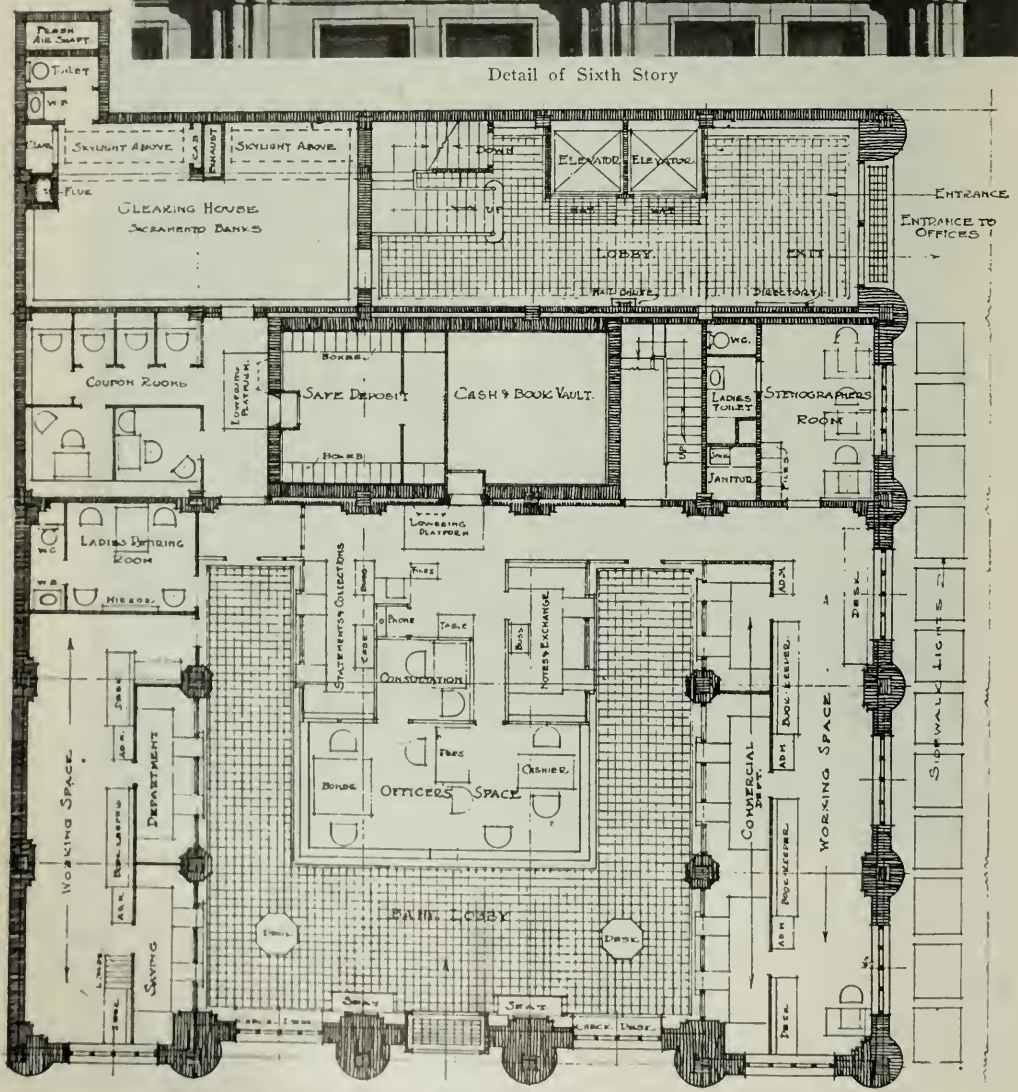
It is only recently that our smaller cities have awakened to an appreciation of beautiful, substantial buildings. Competent men are now paid to design something worth while and the aberrations are fast giving way to something genuine. The public is becoming educated—slowly but sure—but there is a turn in the road, nevertheless, towards a new era of improved building, both public and private. Visit any town or city in California having a population of 10,000 or more and you will not be disappointed in finding a well designed school house, a creditable municipal building, a theatre, public library, church and some good mercantile buildings and residences. We find the banks putting up ornate structures that denote both strength and beauty; school boards are employing competent architects to design schools that are practical and attractive; the architecture of the churches—some of them at least—is expressive of real Gothic or Spanish; private owners are building houses that are homes—comfortable and attractive.

TYPICAL FLOOR PLAN, FORUM BUILDING, SACRAMENTO
R. A. Herold, Architect

Still we have those who cling to the old school—who are content to build four walls and a roof and call them a house! Which calls to mind the complaint of a San Francisco architect: He had undertaken a little venture of his own, buying some land which he proceeded to improve with a half dozen houses that were to be real houses—designed as an architect would design his own abode. The houses were offered to the public at practically the same prices as other homes were being sold, the only difference being in their style and arrangement. Across the street a contractor had put up some box-like structures with plaster exteriors, large plate glass windows and flat roofs. "They were ugly and uninteresting to my mind; those houses across the street," said this architect, "yet would you believe it—they were all sold and occupied before I could get even one of mine off my hands? They seemed to think my houses were freaks."

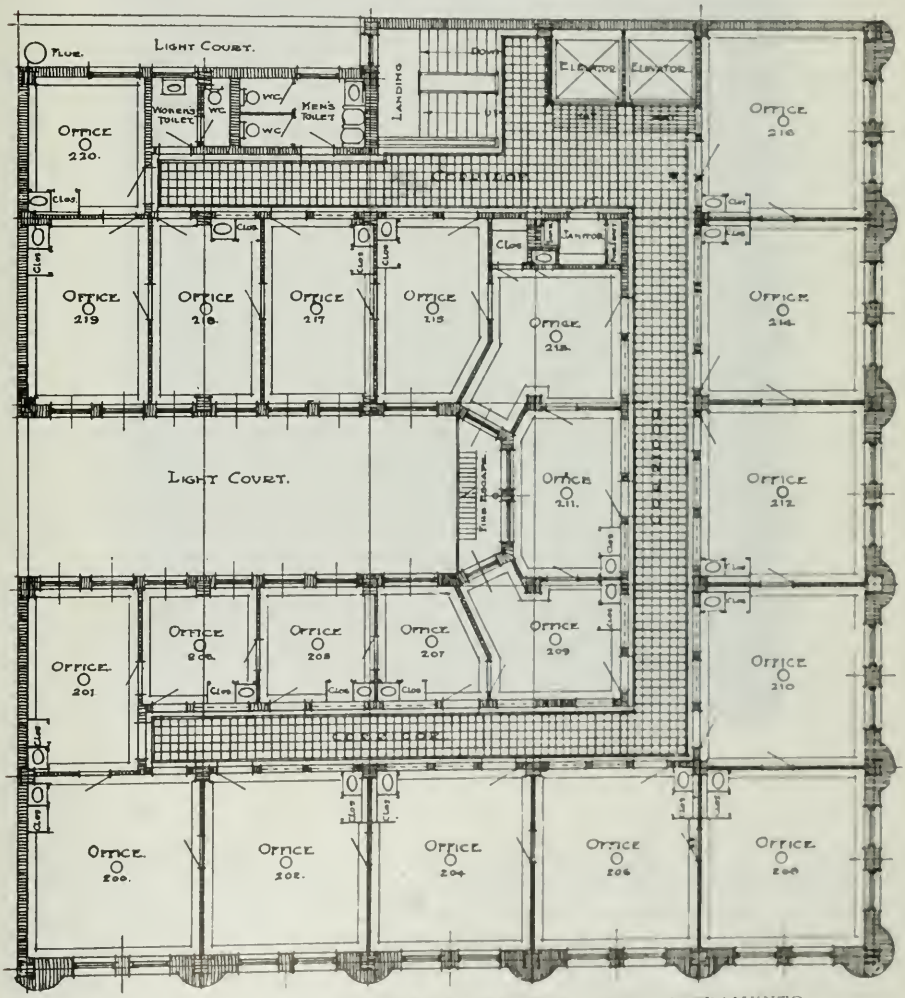
FORUM BUILDING, SACRAMENTO, CALIFORNIA
R. A. HEROLD, ARCHITECT

Detail of Sixth Story




PLAN OF FIRST FLOOR, CAPITAL NATIONAL BANK, SACRAMENTO
R. A. Herold, Architect

Detail of Sixth Story




PLAN OF TYPICAL FLOOR, CAPITAL NATIONAL BANK, SACRAMENTO
R. A. Herold, Architect

We have heard it said that Sacramento has more new buildings of a substantial type, population considered, than any other city in California. Possibly this is true, due to the city being the State capital, and also because it is a very prosperous municipality and a railroad center. The buildings that have been erected there during the last five or ten years have been substantial, it

ENTRANCE MASONIC TEMPLE, SACRAMENTO
R. A. Herold, Architect

is true, but whether they are entitled to be classed as notable contributions to our architecture is a matter of opinion.

The Capital National Bank and the Masonic Temple, whatever opinion one may hold as to their beauty and value, are not ordinary. Their faults are obvious; they display unashamed all the studied gracelessness with which we have become familiar in European work. Yet they are real compositions,

thoroughly consistent, confident even to the point of self-assertiveness. Their individuality is too definite and insistent not to command respectful attention, even though it may not yield aesthetic enjoyment. They exercise the same strange fascination which one feels in the presence of some of the paintings of the newer schools. It is only fair to state that before the buildings themselves the impressions are considerably enhanced by the well managed colors and tex-

ENTRANCE, CAPITAL NATIONAL BANK, SACRAMENTO
R. A. Herold, Architect

tures of the materials, effects which are naturally missing from the photographs. The Capital National Bank is the more important performance of the two. There are things about it which impress one as perversely uncouth, yet not the slightest suspicion of such a contingency perturbs its own self-assurance. It breathes the cold, ruthless force of concentrated wealth, unrelieved by those hypocritical amenities in which such structures are

commonly veiled. It is deliberate, and relentlessly consistent; even the sculpture is entirely of a piece with the architecture. This is essentially the highest praise which can be awarded to architectural sculpture; though it can not, alas, be admitted of a great deal of such sculpture which has far greater intrinsic value. Before the building one feels a sense of power which is genuine, if somewhat disquieting.

MANTEL, MEN'S LOUNGING ROOM, MASONIC TEMPLE, SACRAMENTO
R. A. Herold, Architect

However unmistakably foreign, even exotic, the sources of his inspiration, Mr. Herold has contrived to weld them into results which could not be mistaken for other than American. Other attempts have been made to adapt modern foreign motives to use in this country, but none have been carried out with equal consistency, naturalness, and genuine creative ability. Mr. Herold

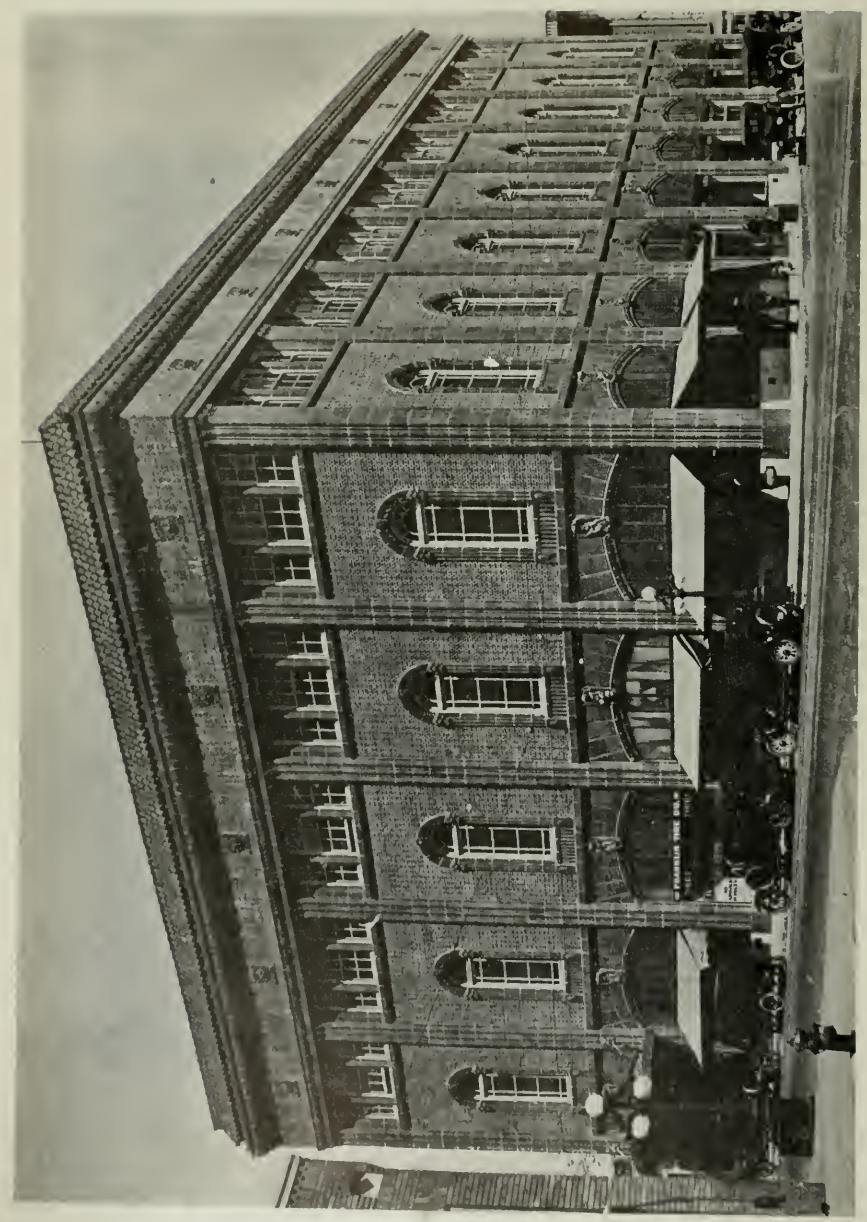
has not arbitrarily impressed a foreign style into unwilling service; he obviously thinks in the medium. For this reason our architecture would be somewhat the poorer without his contribution.

The Forum building is the largest office structure in the capital city. It has a straight-forward, clear, admirable, working plan. It is decidedly superior to many a ten-story building in cities much larger than Sacramento.

LOBBY, MASONIC TEMPLE, SACRAMENTO
R. A. Herold, Architect

Mr. Herold has done admirably with his Country Club. It possesses that feeling of restfulness so necessary but not always accomplished in buildings of this type. The interior is well arranged, comfortable and roomy.

The County Hospital represents considerable study and has been thoughtfully planned for future extensions.



MASONIC TEMPLE, SACRAMENTO, CALIFORNIA
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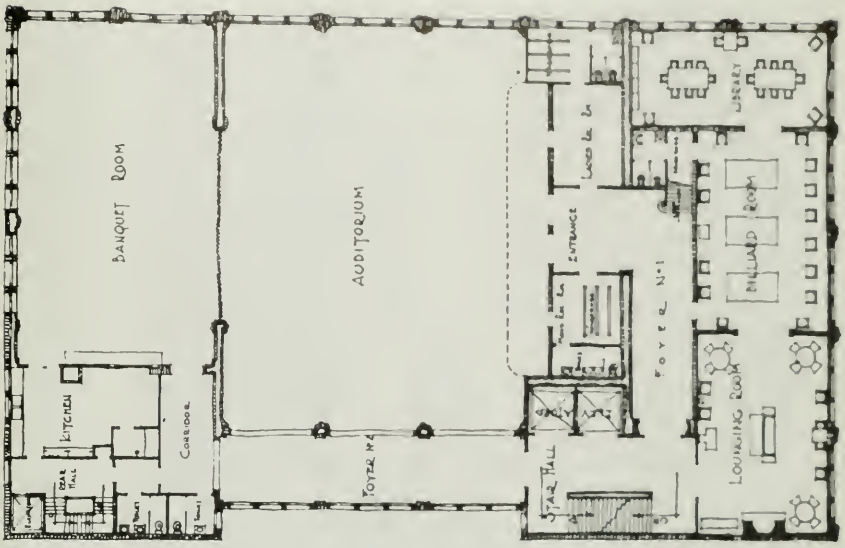
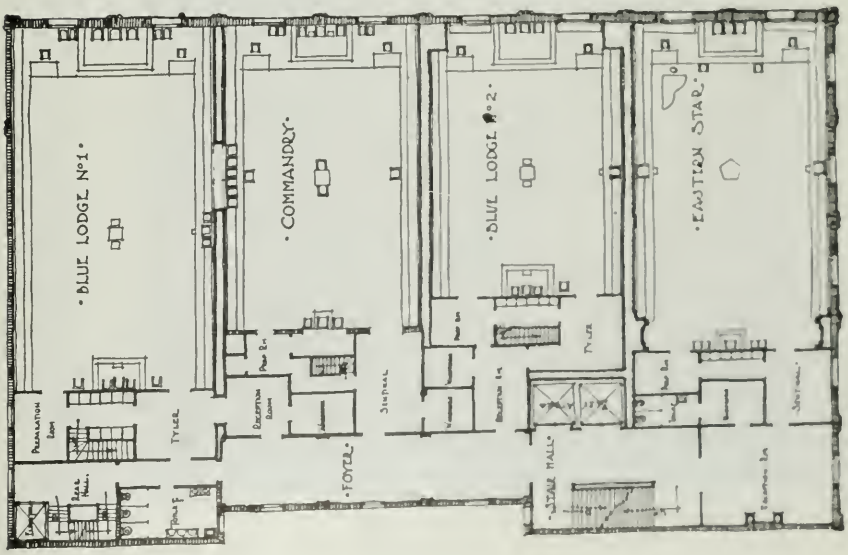


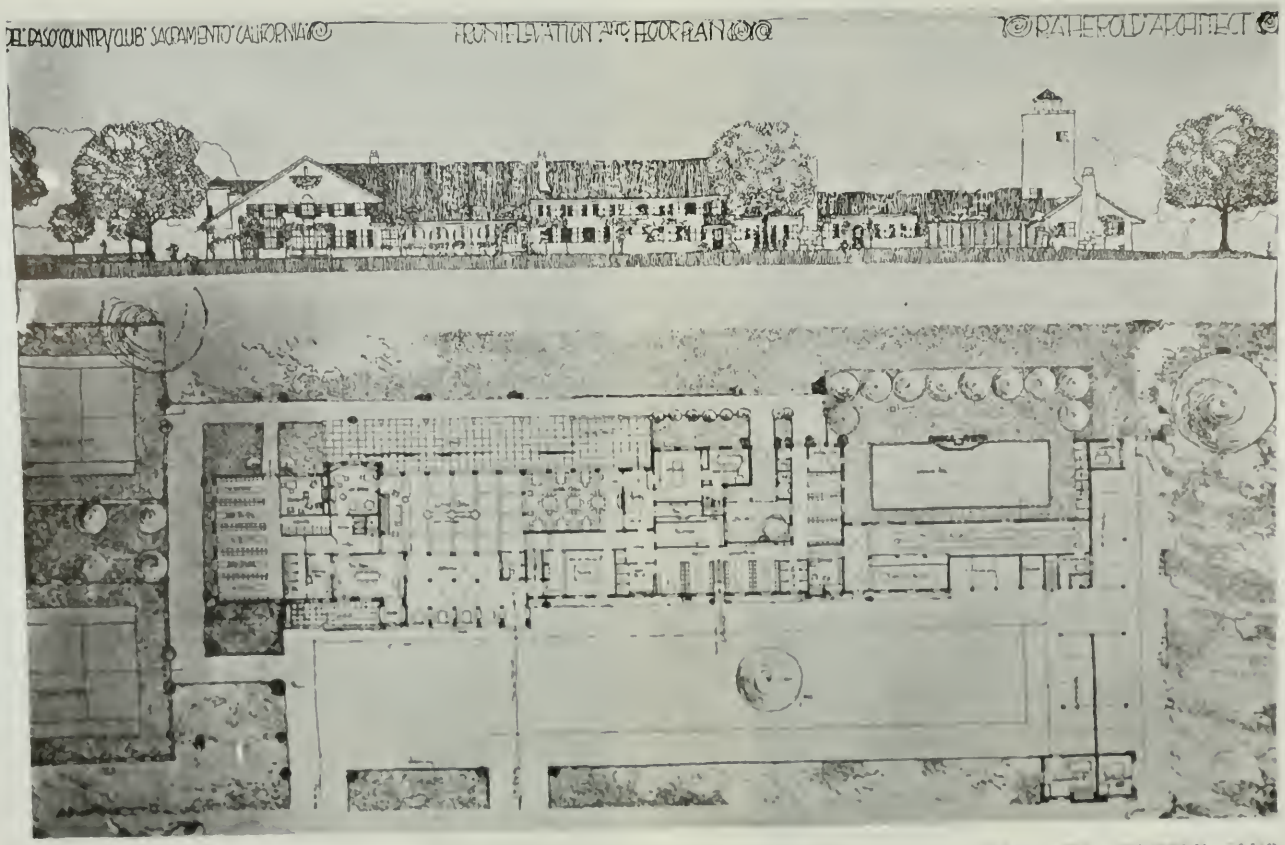

Plan of Third Floor




Plan of Second Floor

MASONIC TEMPLE SACRAMENTO
R. A. Herold, Architect

DEL PASO COUNTRY CLUB,
SACRAMENTO, CALIFORNIA
R. A. HEROLD, ARCHITECT

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LIVING ROOM, DEL PASO COUNTRY CLUB, SACRAMENTO
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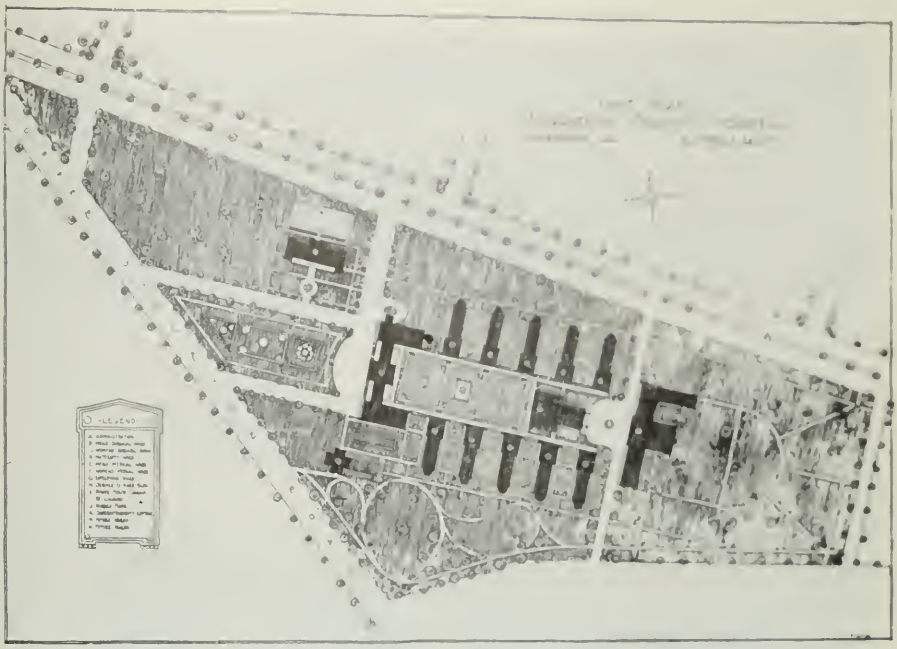
MEN'S LOUNGING ROOM, DEL PASO COUNTRY CLUB, SACRAMENTO
R. A. Herold, Architect



PLOT PLAN, SACRAMENTO COUNTY HOSPITAL
R. A. Herold, Architect

PERSPECTIVE, SACRAMENTO COUNTY HOSPITAL
R. A. Herold, Architect

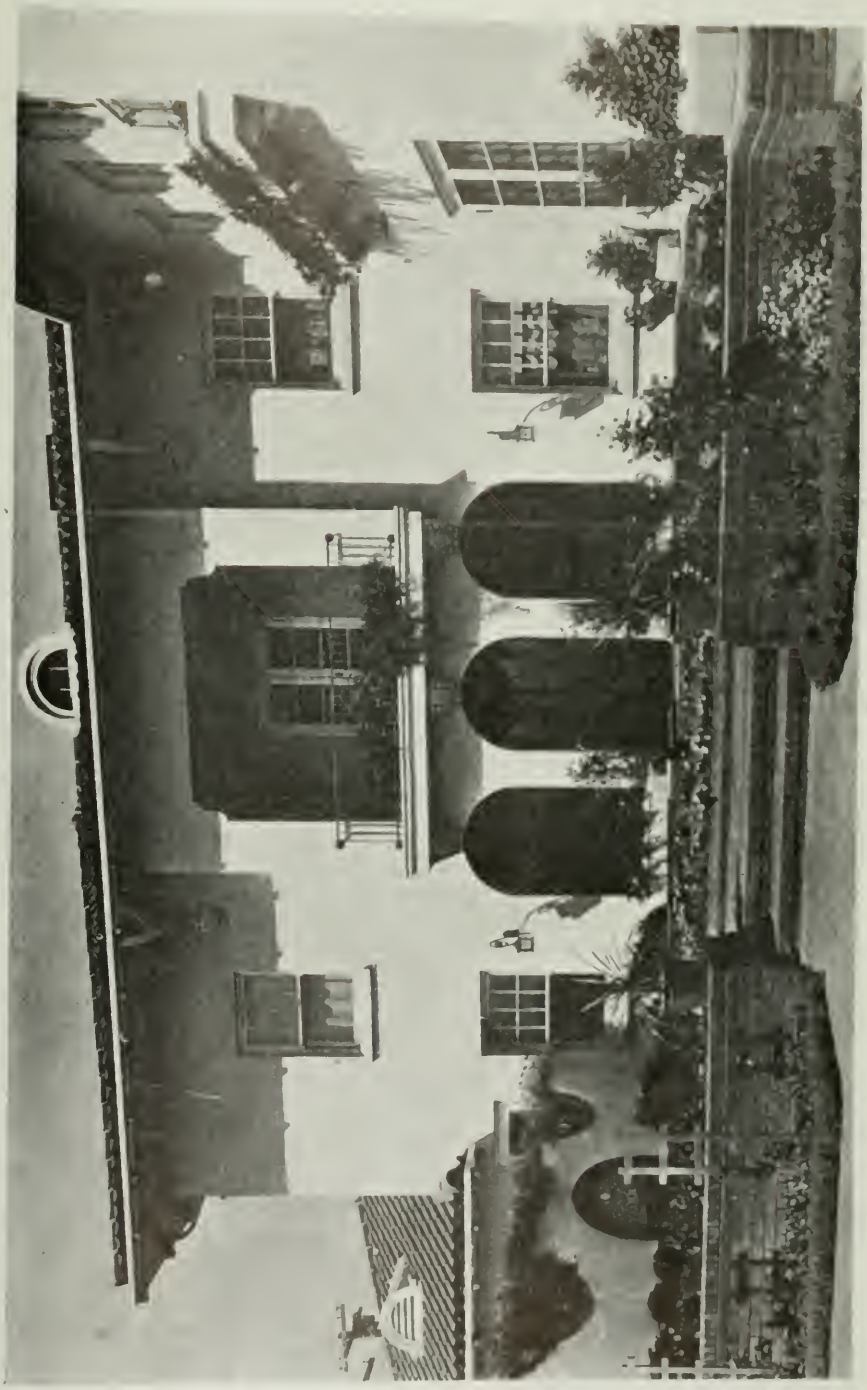
Administration Building

PLOT PLAN, WEIMAR JOINT SANITORIUM, WEIMAR, PLACER COUNTY
R. A. Herold, Architect

Typical Ward Building

Typical Sleeping Porch Ward
WEIMAR JOINT SANITORIUM, WEIMAR, PLACER COUNTY
R. A. Herold, Architect

HOUSE OF MR. D. S. WASSERMAN, SACRAMENTO
R. A. HEROLD, ARCHITECT



HOUSE OF MR. D. K. WASSERMAN, SACRAMENTO
R. A. HEROLD, ARCHITECT

# Present Building Costs and Corresponding Rentals*

By ROBERT G. WALKER

Manager of the Tacoma Building, Tacoma, Wash.

IT is not my intention to go into details of the increased cost of the different materials that enter into the construction of a building. I will speak in general terms, using round figures, which I believe can be taken as fairly representing the general condition in the average city.

The present cost of building is greater than at any time in the history of the country. The two factors that enter into the cost of building, namely labor and material, are vying with each other in the upward flight. Materials that enter into the construction of a building have increased from 60 per cent to 300 per cent. Labor demands more pay, shorter hours and is less efficient and the net result is that the cost of building has increased, on an average throughout the country 75 per cent since 1914, and what is more—the cost of labor and building material holds little promise of reduction.

Many investors who ordinarily are able and willing to put money into building enterprises are holding off, hoping that prices will drop. But according to the best informed, there seems to be no relief for the next five years. In the meantime architects and contracting engineers are working continually to devise new and cheaper processes of construction. Notwithstanding the increased cost, according to figures, reports from 193 cities show the total of building permits for January, 1920, to be $117,747,000, as against a total of $21,732,000 for the same municipalities in January of 1919—a gain of over 440 per cent.

It is interesting to note that of this total building outlay 39 per cent was for industrial plants while 15 per cent was for business buildings. The city of Tacoma is building more large office buildings and business blocks this year than ever before in her history in spite of the high cost of construction.

The owner of a building erected eight years ago must meet a 75 per cent increase in operating expenses, while the owner of a building built at the present time must also meet an increase of 75 per cent in cost of construction.

It is a comparatively simple matter to figure out what the square foot rental of an office building should be to return to the owner 6 per cent net on his investment, but if this rule is adhered to it is apparent that the building constructed under present conditions must command a much higher rental rate than the building erected in pre-war times.

From the standpoint of building cost alone, the building of today must command a 40 per cent higher rental than the building of six or eight years ago. Can the owner of the new building overcome this handicap? Either the older buildings (not the obsolete ones) will profit by the present high cost of building or the owners of the new buildings must be content with a very low return on their investments. The increase in the cost of construction does not give a better building, and the building of six or eight years ago can hardly be said to be obsolete or even to have depreciated 12 or 16 per cent, although as a matter of bookkeeping we may have charged 2 per cent per annum for obsolescence. In other words, your $600,000 building of six years ago is about equal to your $1,000,000 building of today.

This being the case, is the owner of a building constructed in pre-war times warranted in raising rents to the same high standard which the owner of a building, built under present conditions, must maintain in order that he may receive a fair return on his investment? This question may be answered by

* An informal talk given by Mr. Walker at the recent Pacific Northwest Conference in Seattle.

saying that this cause alone does not justify the raise, but there is another cause that does justify an equal or greater raise in rents and that is the ever increasing cost of operation. Whatever the cause, the building owner is entitled to a fair return on his investment.

The result will probably be that both causes will influence rentals to the end that the rate established will be a compromise, that is, the older building will be able to charge a higher rate than would be possible in the absence of the increased cost of building, while the new building will not receive the rate to which it may be fairly entitled because the older building can quote a lower rate and still show the same net return.

Buildings constructed at the present time in the smaller cities and on low priced lots will be entitled to charge a higher per cent of increase than will buildings in the larger cities built on land of higher value. Therefore the lower the ratio of land value to the cost of the building, the higher must be the rate of the rental increase on the total investment.

In the case of the Tacoma building, an increase in rents of 80 per cent over the schedule in force eight years ago would be justified, regardless of the present high cost of building, for then the building would earn not more than 6 per cent net on the original investment, allowing 2 per cent for depreciation and obsolescence. As a matter of fact we have increased our rents only 20 per cent in eight years.

We often hear it said that because building cost has advanced 75 per cent rents must be advanced 75 per cent to correspond. This conclusion, of course, is incorrect. Assuming that the land value remains the same, the proper rate of rental increase should be based on increased cost of building and on increase in operation and overhead.

For example: an office building costing $600,000 in 1914 is located on land valued at $500,000, making an original investment of $1,100,000. The same building would cost today $1,000,000 (land values assumed to be the same) increasing the total investment by 37 per cent or up to $1,500,000, which allows for 75 per cent increase in the cost of the building. To meet this increase in cost of building an increase in rents of 40 per cent is necessary. This means that rents should be advanced from $1.50 to $2.10 per square foot or in like ratio. Remember that this increase is in addition to the increase necessary on account of the increased cost of operation.

The situation reminds me of the new golfer who, at every tee, before driving off insisted on demanding from the caddie the information as to how many yards it was to the next hole, to which the caddie replied "Go on and shoot, you can't over-drive the green." So I say in closing—Brothers, go on and raise your rents, you can't keep up with Hi Cost.

* * *

## Obedient Willie

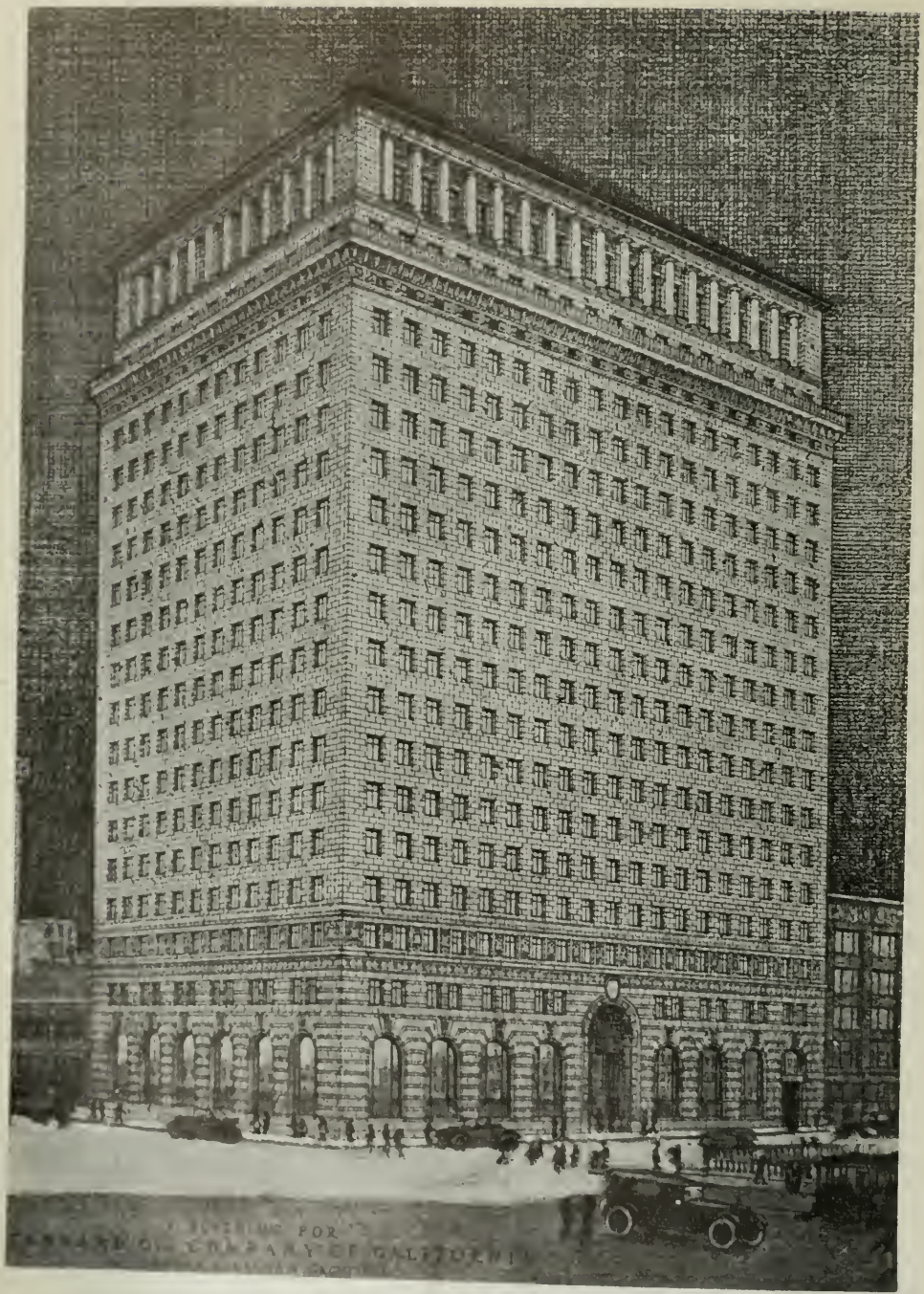
The teacher wanted some plums in order to give an object-lesson during school hours, and, calling one of the small boys, she gave him ten cents and dispatched him to the fruit-stand down on the corner.

"Before you buy the plums, Willie," she cautioned, "you had better pinch one or two to make sure they are ripe."

Little Willie flitted away. Soon he came back and smilingly put the bag on the teacher's desk.

"Oh, thank you, Willie," said the teacher, taking up the bag. "Did you pinch one or two, as I told you to do?"

"Did I?" was the gleeful response. "I pinched the whole bagful, and here's your ten cents."—Ladies' Home Journal.



OFFICE BUILDING FOR THE STANDARD OIL COMPANY
SAN FRANCISCO. GEORGE W. KELHAM, ARCHITECT

NOTE.—The facade is being slightly changed to permit of an additional story, making the building a 21 story structure.

## Need of Standardization in Building

CONDITIONS during and since the war have brought home to everyone the necessity of maintaining production with less labor. Manufacturers have realized this, and have sought all possible means for securing greater efficiency.

The most effective means of increasing production and the basic cause of America's industrial growth is standardization. Elimination of duplications in products and parts has reduced the number of manufacturing operations and effected savings in time and labor.

Comparisons show how hopelessly inadequate the old methods would be under modern conditions. Compare the book of today, turned out by thousands on a modern printing press, each one exactly alike, with the methods of a few centuries ago when each book had to be laboriously written by hand. Every manufacturing industry presents illustrations just as striking.

In the building field, only initial progress has been made in standardization. In some lines such as steel sash a fair degree of standardization has been reached, but building in general still remains a strictly made-to-order proposition. Even in bricks, whose history dates back to the Pharaohs, one will hardly find two manufacturers making the same size.

The cause of the lack of standardization in the building field is largely a matter of evolution. Building being one of the oldest industries has developed processes and methods which have become traditional. In former times, it was simple and logical to build as one went along and to meet any individual requirement. Labor and material were plentiful and inexpensive, and needs were not urgent. Modern times, and particularly the present day, will not permit of such methods if volume and economy of construction is to be obtained.

The greatest building need of the time is standardization. This means the elimination of hundreds of duplicate products which exist only out of traditional habit or personal whims. An instance of the adoption of standardized methods is the action of a number of reinforcing steel companies in eliminating half the duplicate bar sizes—an action which increases production of the rolling mills and makes available larger local stocks. Similar standardization is sure to take place throughout building.

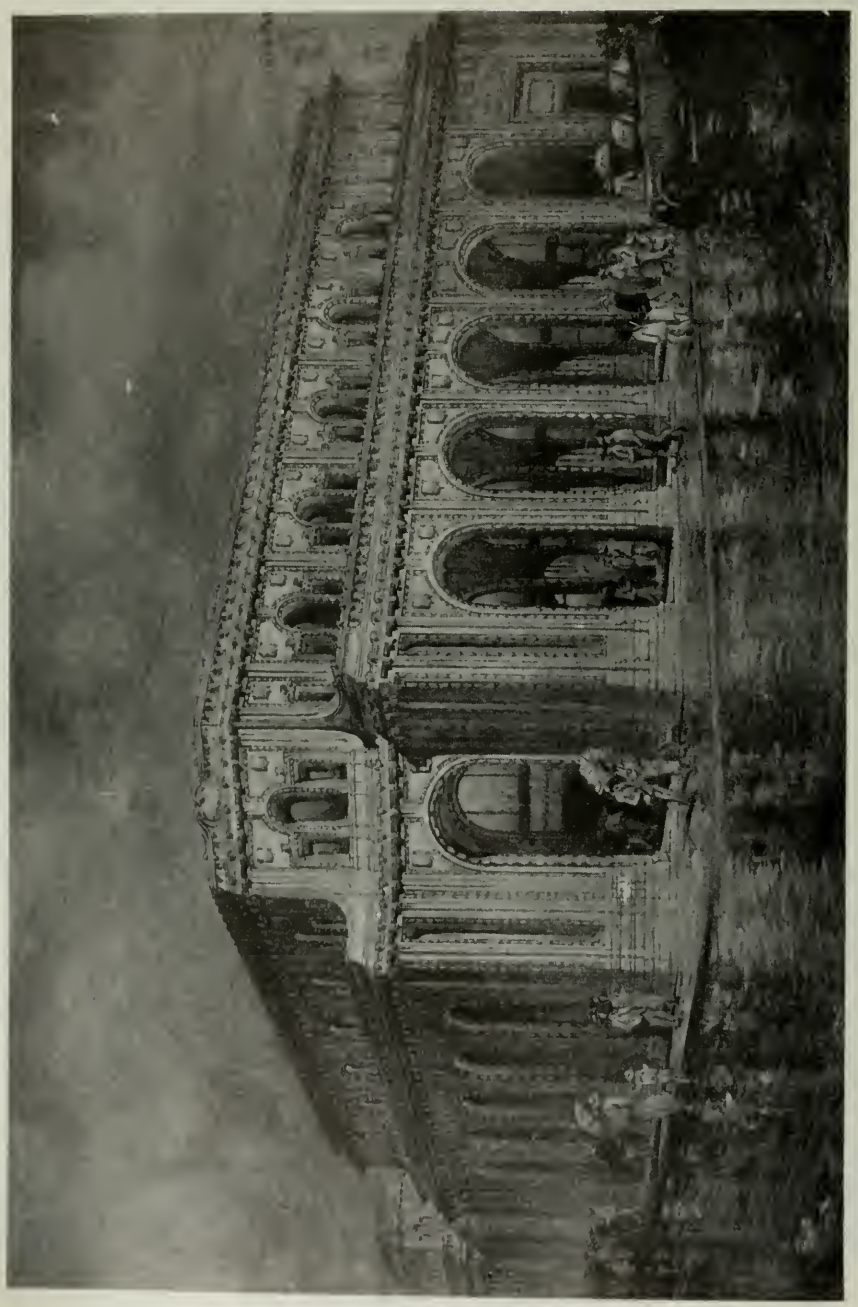
Some critic of the foregoing may ask—"Are you not making all your buildings exactly alike, each one a monotonous repetition of the other? Are you going to eliminate all individuality and art from our structures?" By all means, no! The standardization of the units of construction does not affect in any way the combinations of these units. Designers have always built with units that were repetitions of one another. Bricks in a building are all one size, yet the arrangement of these bricks make possible any desired effect, depending upon the skill of the designer. Standardization will not limit the designer, but will do away with a great part of waste now required by our hand- made methods.

Construction operations in the field must adopt more of the factory methods so that the skilled workman can make his time most effective. Many operations in building date back for centuries, so our erection forces should be able to profit materially by the study of American industry.—Modern Building.

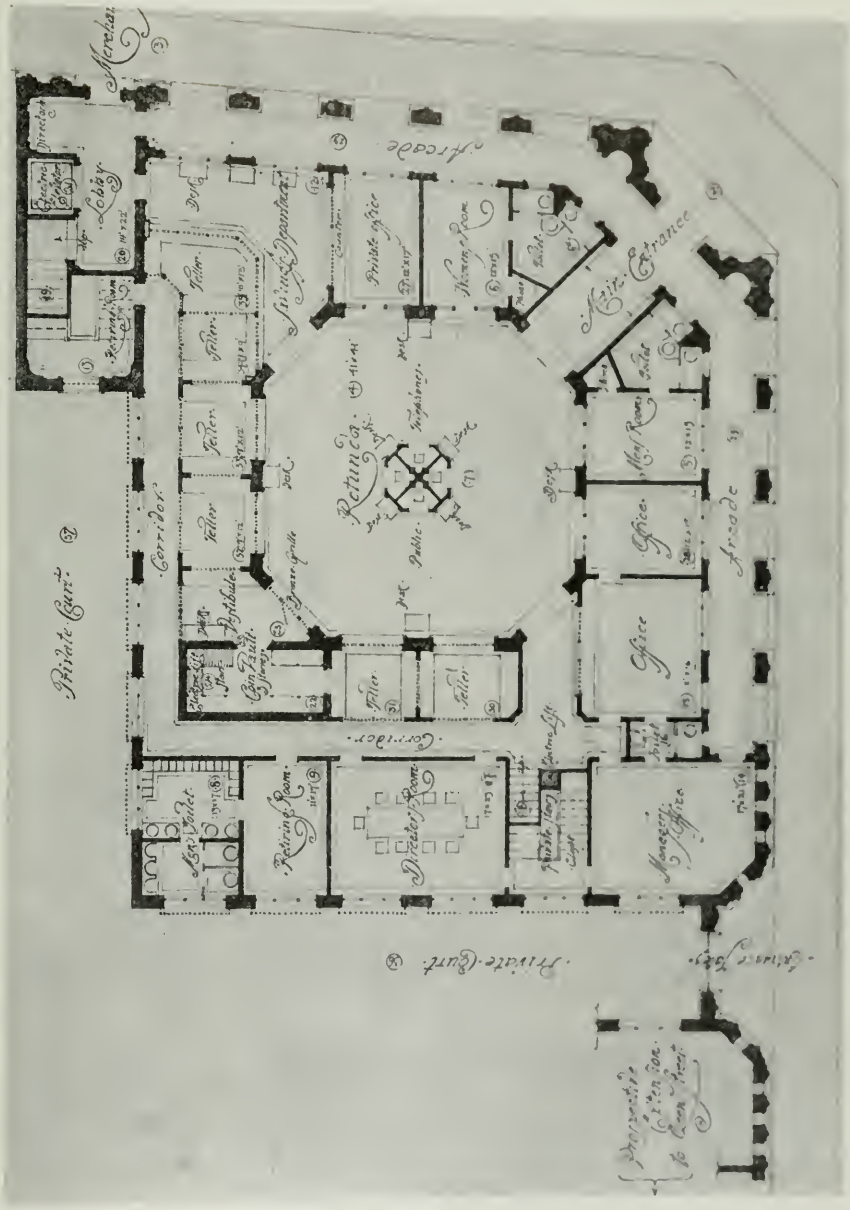
* * *

## Pour Your Own Home

B. L. T. waggishly suggests in The Minneapolis Journal that "Pour Your Own Home," would be an excellent slogan for the builders of concrete habitations.



PERSPECTIVE DESIGN FOR THE BANK OF BISHOP & CO., LTD., HONOLULU, T. H. LOUIS CHRISTIAN MULLGARDT, ARCHITECT


Private Court
Private Court
Corridor
Arcade
Main Entrance
Office
Office
Office
Manager's Office
Directors' Room
Retiring Room
Safe Vault
Gen. Vault
Portfolio
Cashier
Teller
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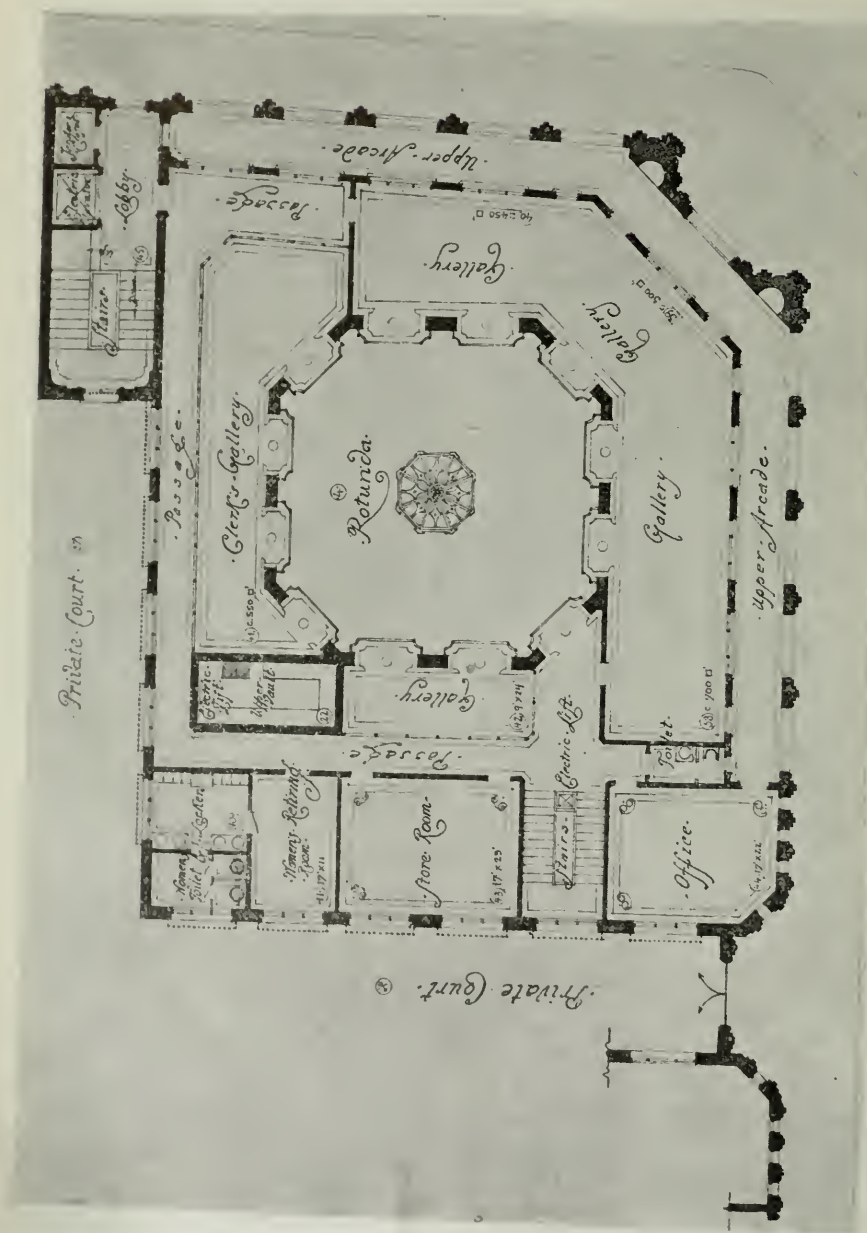
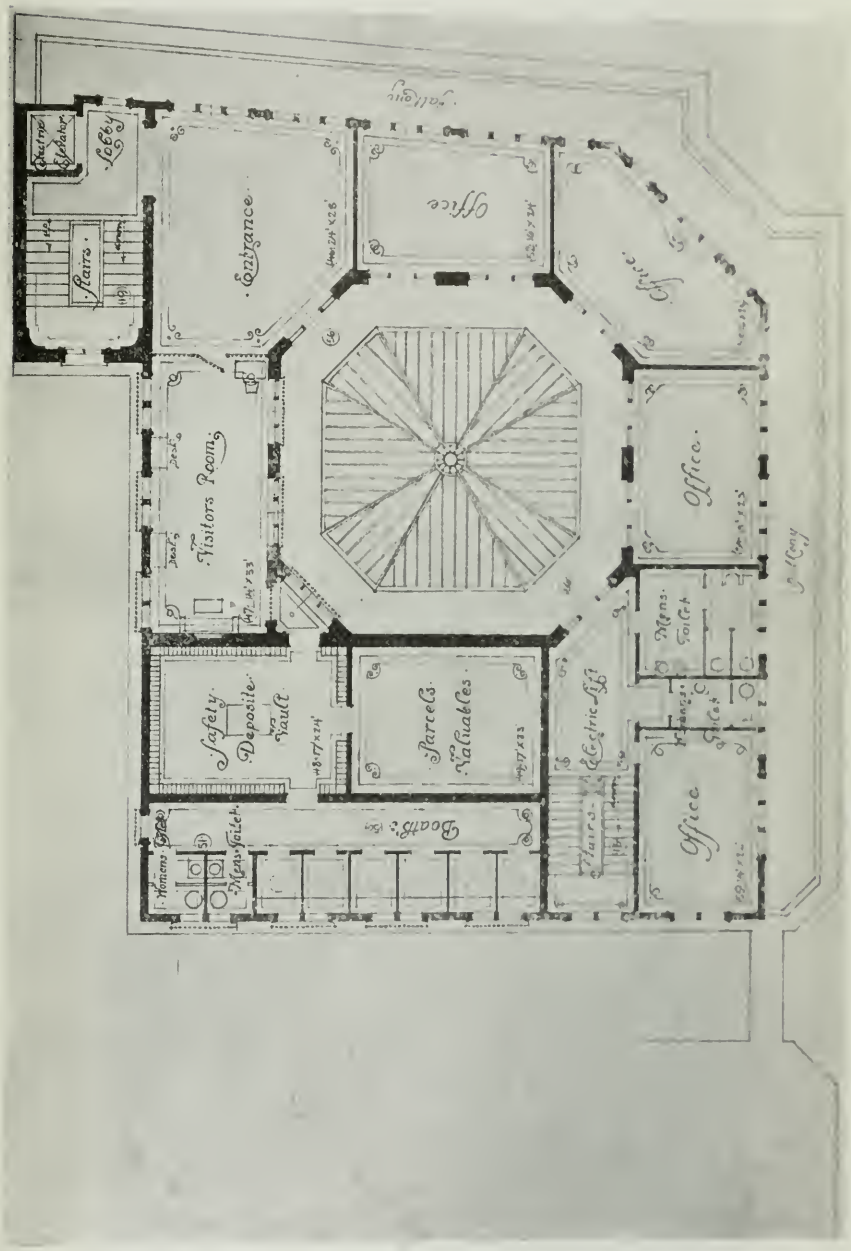
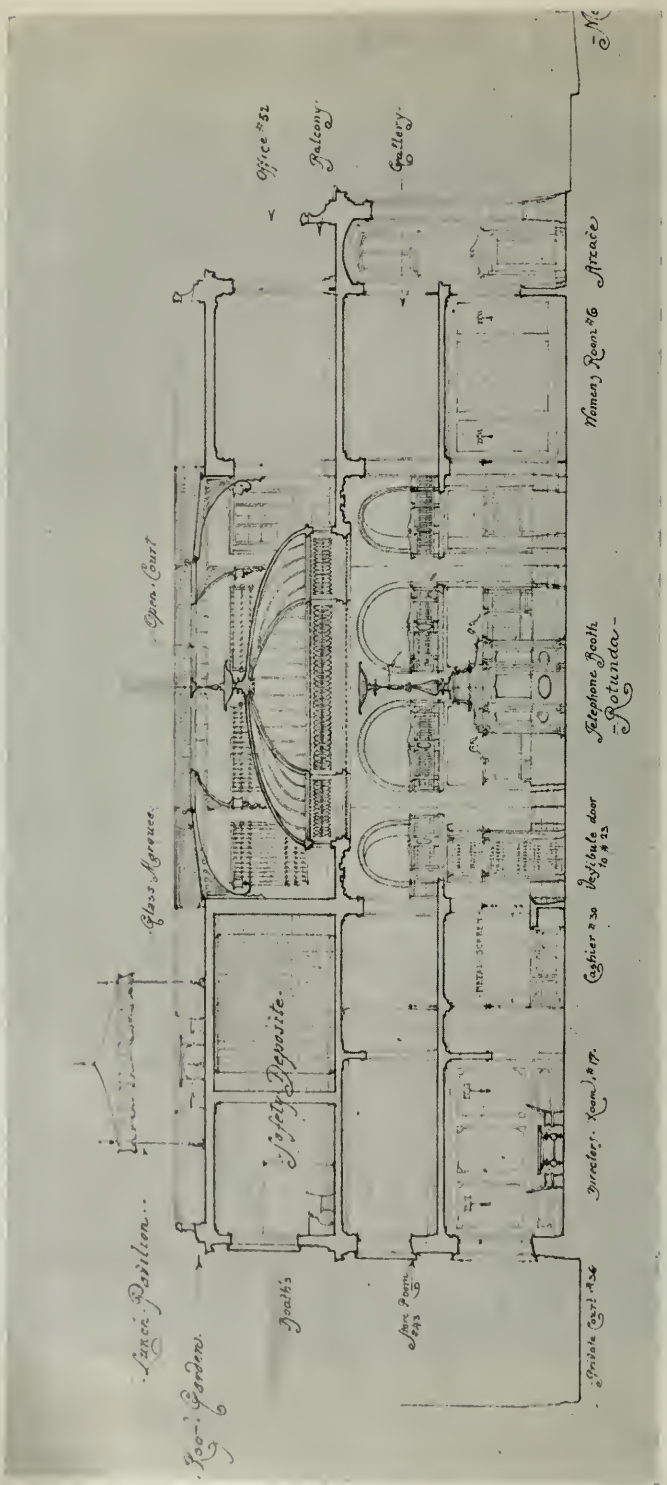



MEZZANINE FLOOR PLAN. DESIGN FOR THE BANK OF BISHOP & CO., LTD., HONOLULU, T. H. LOUIS CHRISTIAN MULLGARDT, ARCHITECT




SECOND FLOOR PLAN DESIGN FOR THE BANK OF BISHOP & CO., LTD., HONOLULU T. H. LOUIS CHRISTIAN MULLGARDT, ARCHITECT




SECTION. DESIGN FOR THE BANK OF BISHOP & CO., LTD., HONOLULU, T. H. LOUIS CHRISTIAN MULLGARDT, ARCHITECT

MODEL DESIGN FOR THE BANK OF BISHOP & CO., LTD., HONOLULU, T. H. LOUIS CHRISTIAN MULLGARDT, ARCHITECT

FALSEWORK FOR CATHEDRAL SET IN "EARTHBOUND," A NEW GOLDWYN PICTURE SOON TO BE PRODUCED

FINISHED VIEW OF CATHEDRAL SET USED IN PICTURIZATION OF BASIL KING'S STORY, "EARTHBOUND"

# Cathedral Built for a Motion Picture

Statuary in Cathedral for Moving Picture Production.

TO attain realism on the motion picture screen, modern producers of photoplays often spend months in erecting special scenes. These sometimes entail enormous expense and the services of an army of workmen.

An example of the extent to which producers go to present realistic settings may be seen in the accompanying photographs of a huge cathedral built on the grounds of the Goldwyn Picture Corporation, at Culver City, California. The cathedral was made for the Basil King story, "Earthbound," and the interior measures 240 feet in length and 90 feet in width. It contains a large crucifix built in proportion to the dimensions of the cathedral

The imposing figure, in its niche, is 17½ feet over all, and is in relief, three quarters round, the head relief being fourteen inches. Two tons of clay were used in building molds for it, and the plastic department of the studios worked several weeks on the task under the direction of Mr. Edward A. Cushing. The crucifix itself was made by Mr. C. J. Schreiber, who executes all the figure molds at the studios.

The material used to make the crucifix is a composition that has the appearance and almost the hardness of stone. It is the result of two years' experimentation at the studios; and has the advantage of being sufficiently viscous, when fresh, to be poured into a mold.

There are many materials similar to stone which might have been used, but they do not photograph to look like stone, and so the hand-made discovery is now used in all construction that represents stone.

The base of each of the massive columns which tower upward to the dome is nearly five feet square. The pulpit rail is eleven feet from the floor, and the seven-branched candlesticks are ten feet in height. From the floor to the top of the altar and reredos is twenty-two feet, with a width of fifteen feet. The wainscot in the transept and baptistry is sixteen feet in height. The smaller pillars are thirty and the larger ones seventy feet in height.

The lighting of the great church interior for the Basil King picture, "Earthbound," is perhaps the most exacting and elaborate example of motion picture illumination ever perfected. The huge interior of the cathedral required a large amount of current; but the most difficult requirement was the effective diffusion of the artificial light to create a general atmosphere of dimness along with the suggestion of sunlight streaming in through some of the high windows. In order to obtain this effect high intensity spotlights were built at the Goldwyn studios, and placed on scaffoldings outside the windows.

One of the difficult complications in carrying out the lighting scheme was due to the fact that the colors of the decorations reflected light in different intensities. Consequently it was necessary to avoid overlighting those portions of the setting near the position of the lights without underlighting those further away. However, all these difficulties were studied as individual problems, and overcome. The result is one of the most unique and magnificent motion picture settings ever built.

## Life of Creosoted Piles

THE need for creosoting piles to prolong their life and protect them from the ravages of marine borers is well known to engineers. The efficiency and economy of creosoted piles is beyond dispute. Furthermore, it has been shown by experience that some of the first piles creosoted in this country were treated in a remarkably thorough and efficient manner, considering how much more we think we know nowadays than was known then concerning the various materials and methods used.

From time to time as structures are demolished to make way for extensive improvements there is afforded an opportunity for observing on a large scale the behavior of treated piles. An instance of this kind is noted in the Electric Railway Journal, from which the following is taken:

A wharf of the Southern Pacific Railroad on San Francisco Bay was removed to make room for port improvements. The wharf was the oldest creosoted pile structure which thus far had been dismantled on the Pacific coast and contained about 14,000 creosoted piles which had been in service for periods ranging from 18 to 29 years. Of these piles, interest centers particularly in 600 which were of Douglas fir, well seasoned before being treated with creosote by the Bethel process in the fall of 1889, and were driven in 1890. Records show that under a pressure of 200 lb. per square inch and a temperature of 260° F., the piles absorbed 14.17 lb. of creosote per cubic foot.

Of these 600 piles, 33 were selected at random for test purposes when the wharf was dismantled. Out of this number 22 (67 per cent) were entirely sound; two (9 per cent) had been slightly attacked by borers; six (18 per cent) had been severely attacked, and two (6 per cent) were so damaged as to be unfit for future use. These percentages were typical of the entire lot, it is reported, and about 70 per cent of the 600 are to be redriven just as they are. In fact, this percentage of poles suitable for redriving, it is reported, applies approximately to the entire 14,000 piles. Those not as suitable showed damage only between mud line and high-water mark, and other portions of these piles were in good condition.

The results of this study are believed to confirm the theory that a creosoted pile is absolutely immune from attack of marine borers such as exist in Pacific Coast waters, so long as the shell or portion of the pile impregnated with creosote remains intact.

*

* *

## Faithful Unto Death

A reporter on a Kansas City paper was among those on a relief train that was being rushed to the scene of a railroad wreck in Missouri. About the first victim the Kansas City reporter saw was a man sitting in the road with his back to a fence. He had a black eye, his face was somewhat scratched, and his clothes were badly torn—but he was entirely calm.

The reporter jumped to the side of the man against the fence. "How many hurt?" he asked of the prostrate one.

"Haven't heard of anybody being hurt," said the battered person.

"What was the cause of the wreck?"

"Wreck? Haven't heard of any wreck."

"You haven't heard of any wreck? Who are you, anyhow?"

"Well, young man, I don't know that that's any of your business, but I am the claim-agent of this road."—Harper's Magazine.

# Progress of the Hetch Hetchy Tunnel Aqueduct

By FREDERICK HAMILTON

WITH the award on May 3d last of a contract for building the eighteen-mile Hetch Hetchy Tunnel Aqueduct, completion of the mountain division of this great water and power supply would seem to be assured. The Tunnel Aqueduct will have a capacity of 400,000,000 gallons daily—ten times the amount of water now consumed in the entire city and county of San Francisco. This great stream will turn the wheels of Moccasin Creek power house, supplying 66,000 horse-power of electrical energy in the initial development, practically as much as the entire amount of electricity consumed in San Francisco.

The history of the Hetch Hetchy project from its inception has been one of intense interest. Opposed by rival power and water companies from the start, fought by misinformed irrigationists, only foresight of the tremendous possibilities of the project and a steadfast fight to make these possibilities a reality, have enabled the constructors to reach a point where ultimate completion is now definitely assured.

The last obstacle in the path of the construction is an injunction suit against the award of the contract to the Construction Company of North America. It has been frequently announced in the public press that this litigation emanates from disgruntled financiers and contractors who bid on the work but whose figures for performing the gigantic task were millions of dollars higher than the successful bid. The special counsel for the Hetch Hetchy project believes that this obstacle will be removed by the courts promptly.

The basis on which the contract for the Tunnel Aqueduct was awarded is a cost-plus-fixed-fee plan. The contractor has taken over the entire construction force organized by City Engineer M. M. O'Shaughnessy. This will be augmented in order that the work may be hastened, as, due to inability to dispose of four and one-half per cent bonds, the City Engineer employed only 500 men on the work where three times that number could have been used to good advantage had he been provided with funds. Mr. Charles C. Tinkler, president of the Construction Company of North America, in assuming charge of the work under the direction of the City Engineer, stated that never in his experience as a contractor, extending over thirty years, has he seen a more efficient organization than was handling the work when he made his bid, and it was this consideration which lead him to make his figures over a million dollars lower than the next nearest bidder.

Before work on the eighteen-mile tunnel or the Hetch Hetchy Dam could be started, a great amount of preliminary construction work was necessary. The Hetch Hetchy Valley, San Francisco's future reservoir site, is 160 miles from San Francisco, in one of the roughest districts of the Sierra Nevada Mountains. There was not even a single wagon road by which the valley could be approached when City Engineer O'Shaughnessy took over the work. Since then the entire district has been made accessible by the construction of roads to every important point from which construction operations will be carried on. It was necessary, moreover, to build a standard gauge railroad to haul the 300,000,000 tons of construction material that will be incorporated into the Mountain Division.

*Hetch Hetchy Railroad.* Hetch Hetchy Railroad, 68 miles in length, extends eastward into the Sierras from Hetch Hetchy Junction. The elevation of Hetch Hetchy Junction is 935 feet, from which the railroad, after crossing two low ridges, drops to 625 feet in a distance of nine miles to cross the Tuolumne

ELEANOR DAM. HETCH HETCHY WATER SUPPLY PROJECT.

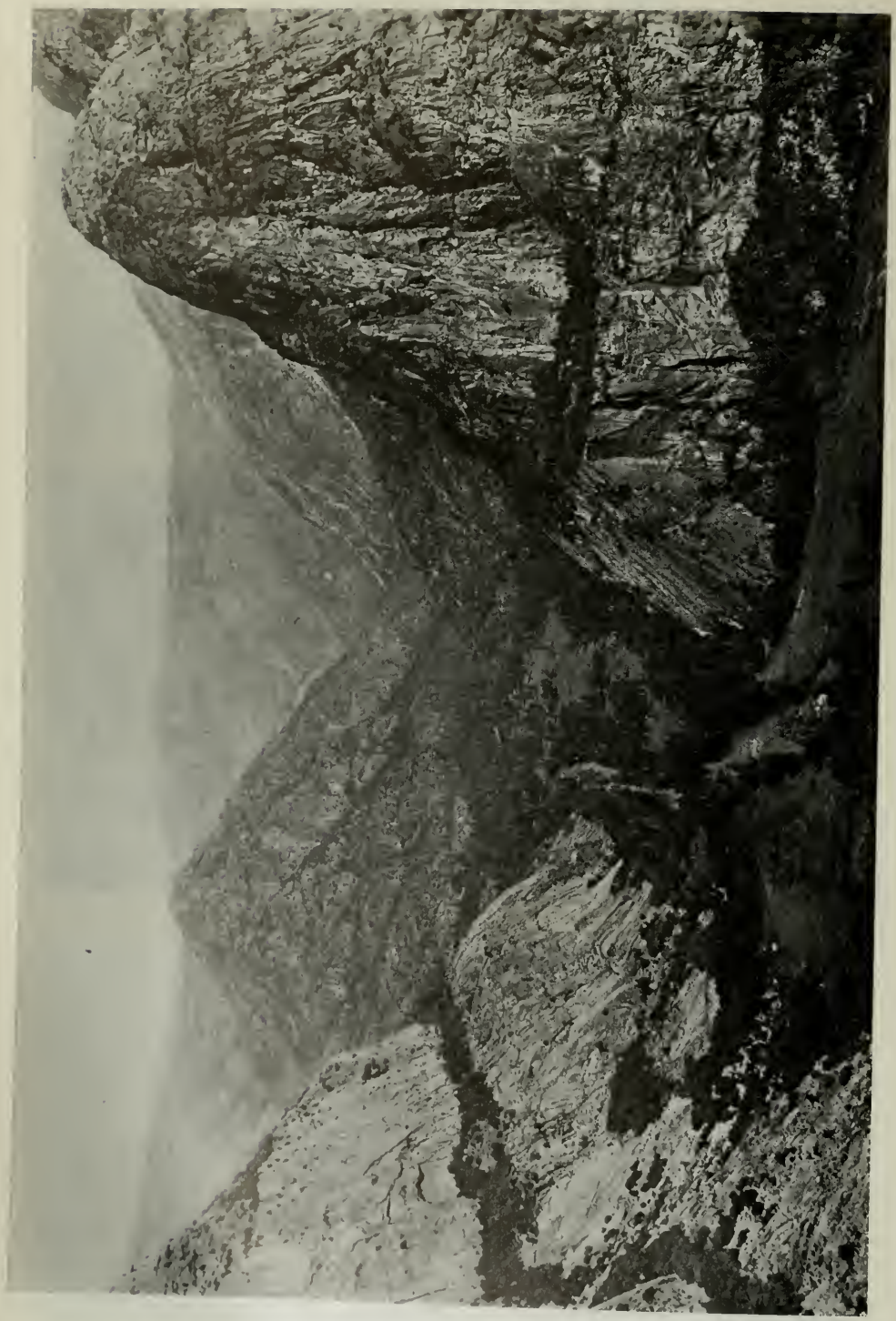
ELEANOR DAM LOOKING NORTHERLY.

HETCH HETCHY RAILROAD OVER TUOLUMNE BRIDGE.

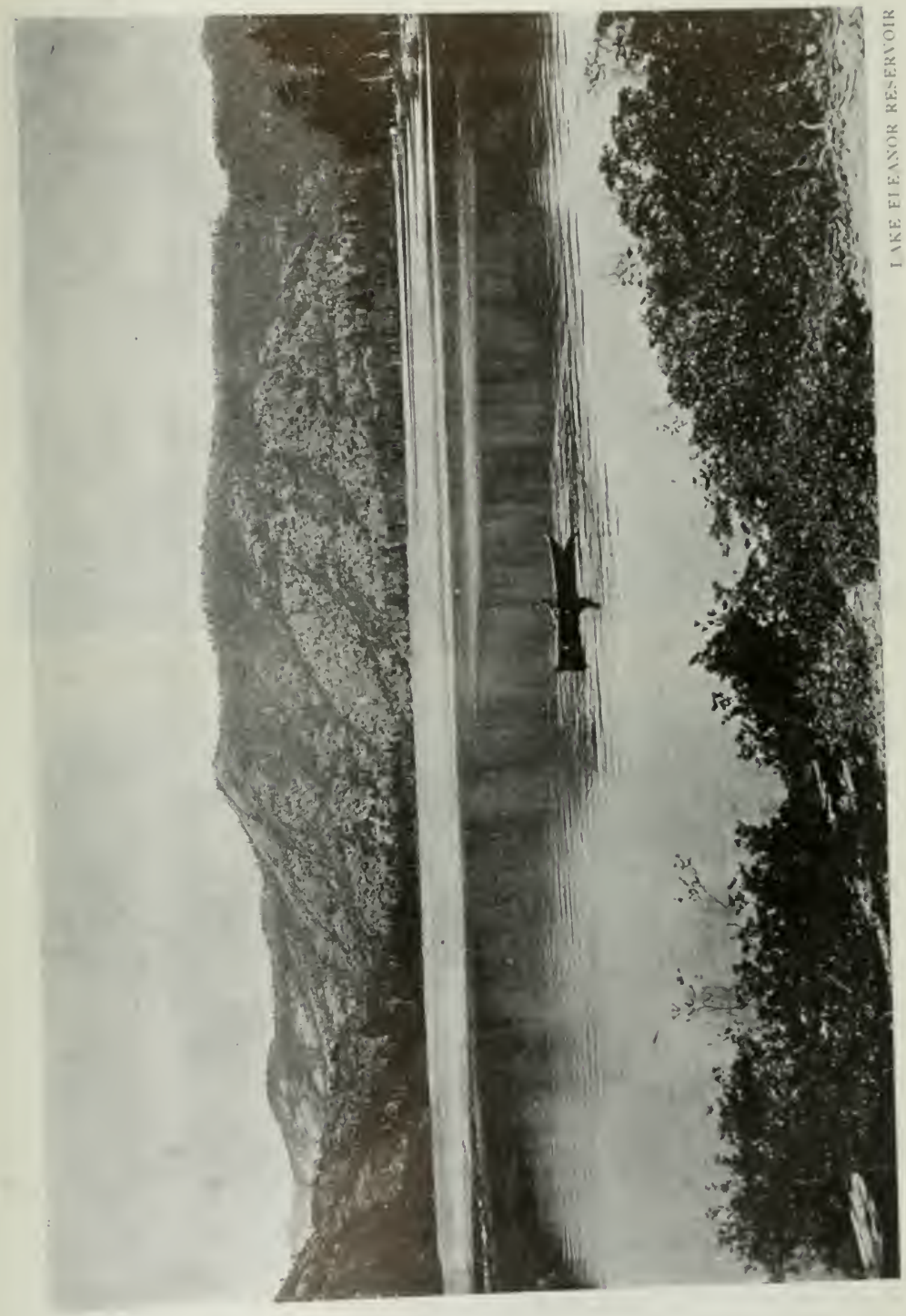
HETCH HETCHY DAMSITE

INTAKE TUNNEL. POWER AQUEDUCT LINE.

ELEANOR DAM LOOKING DOWN STREAM.



HETCH HETCHY RESERVOIR SITE



LAKE ELEANOR RESERVOIR

Power House at Early Intake from Across River

Aqueduct at Early Intake.

FACE OF PRIEST TUNNEL, HETCH HETCHY WATER SUPPLY PROJECT

River, some 12 feet above extreme high water. From the Tuolumne River, the road is extended to Jacksonville, thence up Moccasin Creek and Grizzly Gulch to Priest, and thence to Big Oak Flat and Groveland. Most of the climb for eastward traffic toward the dam is on a grade from 3 to 4 per cent.

Due to the roughness of the country, and since the road is to be operated for freight traffic chiefly, sharp curvature has been frequently used, the maximum being 30°, and curves of from 18 to 26 degrees are numerous.

From Groveland the road continues east past Hamilton Station; thence it descends to the South and Middle Forks of the Tuolumne River, which will be crossed on ballast deck trestles and finally ascends the Poopenaut Pass, where an elevation of 5064 feet is attained; thence a continuous 4 per cent grade descends to the damsite bench 3869 feet in elevation. This latter stretch of road, nine miles in length was exceedingly rough construction, in many instances having been hewn out from almost vertical cliffs.

Over 1,000,000 cubic yards of excavation were necessary for the railroad. More than half of this was in rock and over one-half million feet of lumber was used for trestling the various small canyons which the road crosses.

For all but the nine miles descending from the summit of the ridge at Hog Ranch into Hetch Hetchy Valley, the width of the roadbed is 16 feet at subgrade. For the last nine miles the width is 22 feet.

Besides providing for a location which would involve a minimum cost and would be contiguous to all important points of the Hetch Hetchy Aqueduct, the line was located with a view to developing the industrial possibilities of Tuolumne County by providing ready transportation to the immense timber areas extending along the Middle Fork of the Tuolumne River.

Since the completion of the railroad, two privately owned mills have been put in operation on timber lands contiguous to the line. A large eastern syndicate controls an immense area adjacent and it is believed that this company will erect an immense mill in the immediate future. This will afford to the railroad a very large revenue so that not only will the entire cost of its production be written off before completion of the Mountain Division but a net profit for the city earned in addition.

The passenger possibilities of the railroad were early realized by City Engineer O'Shaughnessy but only within the past six months has the public generally awakened to the attractions of this district. The Yosemite National Park Company is now erecting a lodge at Mather, nine miles from Hetch Hetchy Valley on the line of the Hetch Hetchy Railroad and plans to build an immense hotel at Hetch Hetchy Damsite before the completion of the dam. The route, besides its scenic attractions which are excelled on no railroad in the United States, passes through a district abounding in historic interest. Here are seen the mines of the Argonauts who came to California in '49 and removed from the beds of the creeks which pour into the Tuolumne River, millions of ounces of native gold which they panned and collected in the crude sluices of the last century. The district abounds in romance as it was here that Bret Harte laid the scenes of most of his stories of the early pioneers.

*Lake Eleanor Dam.* To insure a sufficient water supply for operating Early Intake Power House through the dry season, a concrete dam has been erected in record time at Lake Eleanor.

This structure is 1200 feet in length, 70 feet in maximum height, and contains 11,000 cubic yards of concrete, heavily reinforced. The dam is of the buttressed arch type, but with several original features added by the City Engineer. It has 20 arches, each with a span of 40 feet. Arches are on an incline of 50° and are supported by buttresses, heavily reinforced.

In buttressed arch dams heretofore constructed, it has been the custom for the central axes of the arches to be on a plane straight across the stream—

in the Eleanor Dam the central axes of the arches are on a curve which subtends an arc of 30°. Another original feature is that the cross-section of the arches is circular on a horizontal plane, and elliptical on a normal plane.

The work on Lake Eleanor Dam has been exceptionally rapid. The construction of the dam was only decided on in April, 1917. Before any work whatsoever could be done, a road, 12 miles in length, had to be constructed, so that material and equipment could be hauled to the site. For four miles this road is hewn out of solid granite, and rises from the floor of Hetch Hetchy Valley over a ridge 1500 feet above. The road was conpleted in September, 1917, just two years ago.

Concurrently with the construction of the transportation road, a sawmill was erected at Lake Eleanor, to provide timber for form work for the structure. Practically 1,000,000 board feet was required, and this was furnished by the city's own mill on the work at a cost of $8 per M.

Work was then immediately begun on excavation for the foundations of the dam. As fast as impervious bedrock was reached, concrete for the foundations was poured. During October and November, 1917, the concrete was brought to an elevation 10 feet above high water mark. Apertures were left in the structure, through which Eleanor Creek could flow during the winter.

During the entire month of November it was necessary to keep smudges and bon fires burning at Eleanor damsite, to prevent the concrete from freezing, and to heat the water used in the concrete mix.

On December 30, threatening weather conditions led to a discontinuance of the work for the winter, it being feared that the entire crew might be snowed in should an attempt be made to accomplish further results before spring.

Construction on the Eleanor Dam was resumed in May, 1918, and proceeded without interruption. The structure is now finished and is one of the finest examples of a buttressed arch dam ever built.

The entire cost of Lake Eleanor dam was $283,000. This means a cost including excavation of $25.72 per cubic yard for the concrete in place which is an enviable record for Sierra Nevada mountain dam construction considering the long truck haul for cement and machinery and the difficult and expensive form work necessary for an articulated structure of this character. The visitor who makes the trip to Lake Eleanor and rounds the eleven hairpin curves on the ascent of the steep cliffs above Hetch Hetchy Valley where the autos must start and back up three times on each turn with the rear of the machine hanging over space and a 6-inch margin between the rear wheels and vertical drops thousands of feet, can scarcely realize that night and day three shifts of motor trucks made the trip with material between Hetch Hetchy and Lake Eleanor and that never during the entire period was there an accident on the road.

*Lower Cherry Power Development.* The Lower Cherry power house, to furnish electricity for construction purposes over the entire Mountain Division, was completed in 1918. The structure, being intended for temporary purposes only, is of wood frame construction, covered with asbestos protected metal. The foundations are of massive concrete, necessary to resist floods. The machinery and equipment are of the most modern type and design, consisting of three Francis Pelton turbines, each designed to operate at 750 revolutions per minute and to develop 1500 horse-power. Each is direct-connected to a 2300-volt, 3-phase, 60-cycle generator of 1000 K. V. A. capacity. Transformers at the power house step up the current from a voltage of 2300 to 22,000 for transmission to the work.

Water for the operation of the power house is diverted from Cherry River and carried through a conduit, consisting of 1½ miles of flume, one mile of concrete-lined open canal, and five tunnels, 7½ feet square, aggregating one

mile in length. The tunnels are in granite formation and are unlined, except at the portals and at a few points where loose rock was encountered.

Concrete for the canals was poured from a two-sack batch mixer, mounted on an improvised traveler, which spanned the canal. Alternate slabs on the side walls were poured in eight-foot lengths and spaced with expansion joints of heavy roofing paper. This operation required the traveler to move forward about 200 feet and then return for pouring the alternate slabs. The bottom was poured last. A rock crusher was erected adjacent to the canal, at a central point on the work, and crushed material from one of the tunnel dumps.

Flumes were built on very precipitous slopes, where the cost of excavation for concrete canal would have been prohibitive. With more abundant labor and supplies, it is contemplated in the future to substitute tunnels for these flumes and the necessary crosscuts for this purpose have been completed so that work can be prosecuted without interrupting the use of the plant. Excavation for the footings was carried to solid rock, the lower framing completed, and the floor laid. On the finished floor, a wooden rail track was laid, and push cars used to convey lumber for the sides. In all, 1,300,000 board feet of lumber was used, all of which was manufactured at the city's sawmill, and transported by train and auto truck to the canal line.

The power house was first tested in operation on May 6, 1918. Since that date the plant has been run continuously to supply power to the various tunnel working faces and shaft camps. It is estimated that the sale of surplus power from this plant in the immediate future will bring into the City Treasury a net revenue of $8,000 per month.

The entire Lower Cherry power development was constructed by day labor. The tunnels, however, were built under contract by McArthur Brothers, with Charles C. Tinkler in charge of construction for the contractors. Despite the numerous difficulties encountered in this work in a precipitous mountain gorge with none of the appliances which have since been installed on the project, tunnels were completed very efficiently and on time. On this work Mr. Tinkler made a reputation as a competent tunnel constructor under adverse conditions.

The transmission line from Early Intake power house to Priest reservoir was likewise constructed by day labor. A right of way 100 feet in width, vertically over the line of the tunnel aqueduct, was first cleared of timber, and cedar poles, cut in Tuolumne County, erected thereon during the winter of 1916-17. These poles, as far as possible, were cut close to the transmission right of way. On straight line runs, the poles are spaced approximately 225 feet apart.

Substations were erected at each point where electricity would be required for construction purposes. These substations are provided with transformers, primary and secondary, high and low tension switches, lightning arresters and meters.

*Hetch Hetchy Dam and Reservoir.* At its lower end, Hetch Hetchy Valley narrows to a gorge about 60 feet wide at ordinary low water level (elevation 3500 feet), and 800 feet wide at the elevation of the crest of the proposed dam (elevation 3812 feet). The underlying bedrock has been very carefully studied by means of diamond drill borings. It will be necessary to excavate to an average depth of 75 feet below the river bed to obtain an excellent bedrock foundation. This depth is not excessive and has been exceeded in many of the large concrete dams constructed in recent years.

Hetch Hetchy Dam will be a cyclopean concrete structure. Excellent rock for the construction will be obtained from a quarry immediately adjacent to the site. All materials will be handled by gravity from the Hetch Hetchy Railroad, which loops around the south abutment of the structure.

Contract was awarded in August to the Utah Construction Company for the erection of the Hetch Hetchy Dam. The total cost will be $5,447,792.50. The contract calls for the completion of the structure within 90 days. Work on the foundations already is in progress.

The bottom of Hetch Hetchy reservoir has been cleared of all timber. Work will be begun next spring on clearing the sides of the valley, up to the level of the future lake, which will be impounded by the dam. This body of water will be seven miles long and a mile wide, and will give to Yosemite Park one of the most unique attractions in America. In no other locality can be found a valley such as Yosemite and within a few hours' ride of it a mountain lake which will reflect such towering peaks as Kohlana Mountain, Smith Mountain, and in the distance Mount Lisle and Mount Gibson, while rising abruptly from the rim of the lake will be vertical cliffs comparable to El Capitan and Eagles' Peak.

This reservoir will have a capacity of 112 billion gallons of water, which will furnish to San Francisco and the Bay cities a continuous supply of 400 million gallons per day when that amount shall be necessary. This water will be impounded floods, which otherwise would go to waste. The City will release to the Modesto and Turlock Irrigation Districts the natural flow of the Tuolumne up to 2350 second feet, and shall also recognize the rights of the irrigation districts to the extent of 4000 second feet from the 15th of April to the 15th of June each year.

*Mountain Division of Tunnel Aqueduct.* From Hetch Hetchy reservoir to Early Intake, a distance of 12 miles, the riverbed of the Tuolumne will temporarily serve as a conduit for the waters impounded by Hetch Hetchy Dam, until such time as the necessity for the generation of additional power will justify the construction of a tunnel from Hetch Hetchy Damsite to a forebay above Early Intake.

From Early Intake the first section of the tunnel aqueduct extends to the South Fork of the Tuolumne, a distance of four and one-half miles. This tunnel can be worked from two portals only, since the height of the mountain penetrated by the bore is too great to permit of any shafts being sunk to the tunnel line at intermediate points.

Work is not in progress at both portals. The rock encountered is hard, requiring about 30 pounds of dynamite per lineal foot. The present rate of progress is about five feet daily on each portal, but this can be more than doubled when sufficient money is made available to the City Engineer to rush the construction, so that the tunnel can be completed in less than three years.

This tunnel is the controlling factor in the time necessary to supply San Francisco with 66,000 horsepower of electrical energy, as the remaining 13½ miles of tunnel between South Fork and the regulating reservoir above Moccasin Creek Power House can be worked from two portals, two intermediate shafts and seven adits.

Work on this section of the tunnel from South Fork to Priest regulating reservoir is now being advanced from Priest portal, and from Big Creek shaft. Second Garrotte, the other of the shafts on this line, has been sunk to a depth of 300 feet, and it is calculated that the entire 13½ miles of tunnel, together with the shafts, can be easily completed within two and one-half years.

The tunnels will be 10 feet 3 inches high and 10 feet 3 inches wide, inside the concrete tunnel lining, which will have a thickness of 6 inches.

The work above outlined is primarily to bring to San Francisco and the Bay communities, 400,000,000 gallons of pure mountain water daily. A very important feature of the construction, however, is that besides supplying water for domestic purposes, the Mountain Division of the Hetch Hetchy Project

will render available immediately on its completion 60,000 horsepower of electrical energy, or 380,000,000 K. W. hours annually.

When it is considered that at present there is consumed in San Francisco annually only 360,000,000 K. W. hours, the tremendous value of the Hetch Hetchy Grant, from a power standpoint, can be more fully appreciated.

By the completion of the Moccasin Creek power house, the electrical energy available for San Francisco will be more than doubled. This will be of incalculable value in aiding the industrial development of this city and the Bay communities, which are now seriously hampered in their growth by lack of water and inadequate supply of power. Ship building and manufactories of every description will be greatly stimulated, and the City's tangible assets tremendously increased.

*Future Stages of Aqueduct Construction.* Another tunnel 5.75 miles in length will extend from Moccasin Creek to Red Mountain Bar, where the main Tuolumne River will be crossed with a short steel pipe. Thence a tunnel 11.4 miles in length will lead to Oakdale portal, on the easterly side of the San Joaquin Valley.

From Oakdale portal (about four miles southeasterly from the town of Knights Ferry), the commencement of the present survey to Tesla portal, on the west side of San Joaquin River (about eight miles southeasterly from Tracy), the aqueduct will consist of 45.2 miles of steel pressure pipe. The thickness of the steel pipe, and hence the cost, is practically proportional to the water pressure, therefore the pipe line was located on the highest ground immediately adjacent to the direct or shortest line to be followed.

Through the Coast Range from Tesla portal to Irvington gate house, except for a small steel siphon crossing the Alameda Creek channel, the aqueduct will consist of tunnels aggregating approximately 31 miles in length. This section has been the subject of close geological study and the surveyed location made follows what is at present considered the most feasible route avoiding fault lines and rock of uncertain character. The location for the route six or seven miles immediately west of Tesla portal is as yet uncertain.

The line thence parallels the Southern Pacific Railroad, through the southerly portion of Redwood City to what is known as the Redwood City portal, two miles westerly from the town of Redwood. The remainder of the aqueduct will consist of tunnels and pipe lines extending to the Crocker Amazon reservoir above Visitacion Valley near the county line.

The question has often been asked how soon Hetch Hetchy water could be delivered in San Francisco. The answer of the City Engineer is that only four years need now elapse between the time he is provided with the necessary funds and the actual completion of the project. The efficient manner in which the Mountain Division of the project has been administered is conclusive proof that the City Engineer's estimates both as to time and cost are entirely conservative. The problem which confronts the city is of a financial not of an engineering character. The principal difficulties in the construction of the project have been already successfully overcome.

San Francisco's status as shown in the 1920 census should furnish food for thought for every resident of this city. What is needed to insure the success of the Hetch Hetchy project is strong cooperation from every element in San Francisco, including city officials, bankers, merchants and labor. Our growth has been impeded by lack of adequate water supply; our prosperity and development are injured by lack of cooperation. Constructive criticism is always advantageous but the carping of the "knocker" has been very conspicuous on many of the projects designed for San Francisco's benefit and must inevitably redound to the city's detriment.

## Interesting Meeting of Southern California Chapter

THE June meeting of the Southern California Chapter, American Institute of Architects, was one of the most enjoyable of the year. Mr. Myron Hunt entertained the members with a splendid address on "Landscape Architecture." Mr. Hunt's talk was illustrated by a large number of colored stereopticon views of beautiful gardens in Los Angeles, Pasadena and Santa Barbara. It was perhaps a revelation to many of the architects to learn that there are so many exceptionally beautiful examples of landscape architecture in Southern California. It is to be regretted that nearly all of these works are on private estates and not generally open to the public for its appreciation. In his talk, Mr. Hunt emphasized the necessity for co-operation between the architects and landscape architects. It was interesting to note that five of the most beautiful gardens shown were the five selected by the jury which recently rendered a report on the most notable examples of architecture and landscape work, and which is to be published in full with illustrations in the July Architect and Engineer.

Messrs. A. F. Rosenheim and J. J. Backus, delegates from the local chapter to the National convention which was held in Washington the first week in May, submitted a comprehensive and detailed report on the proceedings of the convention. The members were particularly interested in that portion of the report which dealt with the disposition by the convention of a protest from the local Chapter against the signing of an agreement between the American Institute of Architects and the American Federation of Labor binding the architects to write their specifications in accordance with decisions of a board of jurisdictional awards created for the purpose of settling disputes between various crafts as to which has jurisdiction over certain portions of building construction. The first decisions which have been made by the board would seem to require the local architects to write their specifications in a manner contrary to the present custom and public policy in Southern California and is considered as an infringement by the Institute on their personal rights. The report of the delegates was referred to a committee for further consideration. This committee will consist of Messrs. Myron Hunt, J. E. Allison, J. J. Backus, John P. Krempel, A. F. Rosenheim, Octavius Morgan and John C. Austin.

President Bergstrom read the proposed constitution of a State Engineering Council which it is planned to organize in California. The Council will be composed of representatives from all technical and engineering societies in the state and will act for the technical professions whenever concerted action is necessary or advisable.

The committee on contracts and specifications rendered a report making recommendations on standardizing office hours for architects' offices, holidays with pay for draftsmen and pay for overtime work. After considerable discussion and several amendments the report as adopted provides that draftsmen shall be employed to work forty-four hours per week, eight hours per day for five days and four hours on Saturday. The office hours are to commence at 8:30 a. m. Holidays with pay are to be granted on New Years Day, July 4, Memorial Day, Labor Day, Thanksgiving and Christmas Day. The pay for overtime work shall be time and one-half. Draftsmen who have been regularly employed for one year or more are to be granted one to two weeks' vacation with pay. Copies of the recommendations are to be furnished each architect to be posted in his office.

An invitation from Mr. Winsor Soule for the Chapter to hold its July meeting at Santa Barbara was accepted. Mr. Soule will have charge of the entertainment program and it is understood it will include a barbecue, campfire and other features. The meeting will be held on July 9, 10 and 11

# Elements that must be Considered in Cost Estimating*

THE subject "Cost Estimating" is of unusually wide scope as practically each type of contract work has to be analyzed on its own merits and is subject to special considerations. In all cases, however, the following elements enter and must be given consideration:

Financial Credit
Constructive Skill
Use of Plant
Hazard
Profit.

*Financial Credit.*—The contractor should make a carefully prepared schedule of the amount of money which will have to be invested in the proposed work from the time he signs the contract until his final estimate is rendered, and from such schedule he must determine the amount of interest this money will cost and this amount is a proper charge against the work. If this is not done the contractor is merely contributing to the owner this amount.

Furthermore, a careful analysis along these lines will often disclose the fact that a certain piece of work requires a larger amount of money to handle it than is apparent at first glance, and such a condition might work a hardship if not disaster on the contractor in spite of the fact that all other considerations had been taken care of. It is a notorious fact that on certain types of contracts, pay for preliminary work, which may be a large item, cannot be secured through the medium of the regular unit prices until the work has progressed well along to completion.

*Constructive Skill.*—Contractors engaged in business are entitled to receive compensation in the shape of an annual salary for personal services rendered and it is our belief that any computations of cost should include sufficient amount to cover such salary whether it be that of a single individual or various members of a partnership or corporation. If this is not done the contractor is contributing his services to the owner without remuneration, because by no stretch of the imagination can there be any rightly considered profit except as over and above a reasonable salary allowance to the contractor himself.

*Use of Plant.*—This item justifies an independent discussion by itself and we suggest that the association appoint a committee to deal directly with it.

*Hazard.*—Many specifications include clauses which contemplate making the contractor assume risks which should properly be borne by the site, or in other words, should be at the owner's risk. In making a proposal on such work the contractor has two alternatives—one to protect himself in his proposal against such risks by special provision in his proposal, or secondly, to put a large value on any possible risk which he is asked to stand.

It may be well to add in this connection that while it ordinarily behooves a contractor to be somewhat of an optimist he can well afford to be a confirmed pessimist when figuring this portion of a contract. It is possible this fact more than any other has caused good firms to have to go out of the contracting business.

*Profit.*—As to the necessity of a profit we can all be agreed. As to the amount which must be added as a percentage on the cost, differences of opinion will exist, but it must be remembered that the contracting business is a particularly hazardous one; that it is irregular in volume and that every contract will not necessarily be profitable.

* From the May Bulletin of the Associated General Contractors of America. Report of Committee on Cost Estimating of the Northwestern Association of General Contractors.

Furthermore, it must be remembered that the average merchant sells goods from his shelves at a profit with a definitely established cost for the goods themselves. The manufacturer sells on short term contracts—his overhead, plant installation and plant maintenance costs are established and regular, and while he may not in all cases be willing to admit it, the manufacturer is practically working on a cost plus basis today. The only difference in most cases between his method of fixing prices and that of a cost plus construction contract is that the manufacturer can and does add a larger profit for the use of his organization, brains and energy. The contractor must provide his plant, must guess at the cost of it, in place, must guess at the operating cost, must guess successfully if he is to stay in the business as to what the labor market will be, and if he is willing to do this he is surely entitled to a fair margin of profit.

*Necessary Factors in Estimating.*—The following items also enter into most work and must be considered in detail before the preliminary cost of a piece of work can be considered as complete:

Interest.
Overhead expense.
Bonds.
Insurance—
  Employers' liability.
  Public liability.
  Fire insurance.
Special risks.
Freight on outfit to and from work.
Moving in and out.
Land damages.
Camp and other buildings.
Preliminary work.
Cost of materials plus freight.
Hauling materials.
Supervision.
Labor.
Loss on board.
Transportation of labor.
Tools.
Plant rental.
Supplies.
Running repairs.
General repairs.
Special.
Machinery.
Fuel and power.
Water.

Taking up these items in order we will comment briefly on each:

Interest.—This is covered in our discussion of financial credits.

Overhead.—A contractor should establish the proper cost of the overhead charges in his business. This should include the charges, salary allowance for members of the firm, traveling expenses, etc. Provision should also be made here for the maintenance of an equipment storage yard.

Bonds.—No comment should be necessary here on this item.

Insurance.—It is not necessary to make a discussion of the ordinary items, but we wish to call attention to the fact that prudence would require that any combustible material, together with camps, storehouses, etc., should be insured and such insurance is of course a proper item of cost to the work. There are often special risks which occur upon a job which may be protected by insurance, and such insurance is also part of the cost.

Freight on Outfit.—This is possibly a portion of the item following, but we have listed it separately because we believe that many contractors under-estimate the amount of freight that they will be required to pay on their outfits in such cases.

Moving in and Out Expense.—This is an item frequently overlooked by contractors, but one which requires careful consideration. First, there is expense of loading outfit in the contractor's yard; second, the unloading of it at point of destination; third, the moving of it perhaps many miles across country; fourth, the setting up and getting plant ready to operate, and the reverse of all these operations until the plant is again delivered in the contractor's yard.

Land Damages.—This is an item which we believe many contractors neglect entirely and still it is one which costs considerable sums of money. This seems particularly true in connection with county road work.

Land damages accrue from the use of property for camping purposes, from moving outfits across fields for the diversion of public highways, and for storage yard and other construction layout.

Camp and Other Buildings.—This is another fruitful source of underestimating by contractors, often in the loose assumption that "The boarding house will pay for the camps." If such a condition ever existed it must have been a great many years ago and we believe that present-day conditions necessitate including the cost of all camps and temporary buildings required to carry on the work. We further believe that contractors should be careful to avoid the thought of high salvage values to avoid subsequent disappointment.

Preliminary Work.—This is an item which should not only be considered in cost estimating, but we believe that we should digress from the subject for a moment and call attention to the fact that it is probably a duty which every contractor owes to himself to work out a definite scheme of handling a piece of work before he proceeds with an estimte. This does not mean that he must detail the laying out of an entire piece of work but that he must see clearly that a certain general line of procedure can be followed with expectation of proper results therefrom.

Cost of Materials.—Mention is made of this particularly to emphasize the fact that a cost estimate is usually based on certain material quotations, and it is very necessary in these times that a prospective bidder should be careful to be properly covered with material quotations when making a bid and to close up promptly with the material dealers after the award of the contract.

In connection with this comes a question of freight which must not be overlooked, but in case of the present railway situation it would seem necessary for every bidder to make special provision in his proposal to protect against a change in freight rates during the time of the work.

Hauling Materials.—All hauling costs should be very carefully analyzed, as they are often a fruitful source of under-estimation.

Supervision.—Care should be taken to see that any computation of labor also includes any supervision which is not covered in the item of overhead. This would usually mean general foremen, timekeepers, labor agents.

Labor.—Labor is perhaps the most difficult item in the computing of cost which a contractor has to deal with. Rates have been rising for several years and it is apparent that wages have not reached their peak. Provision must be made somewhere to protect against what the bidder considers the maximum rate which will accrue during the life of the contract.

Loss on Board.—In most cases there is a definite board loss in connection with camps. While this may not be true with large camps, working through a considerable period of time, the small movable camp such as is in vogue on highway work usually contributes a constant loss to the work.

Transportation of Labor.—This is an item very often neglected, yet it is very common to have to advance railroad fares to laborers with the resulting increase in the cost of the work.

Tools.—Contractors often fail to make the proper allowance for tools. Careful analysis of work done will show that a tool item is a very appreciable one in every contract and will also indicate that tools do not carry any too well from job to job, but that there is a definite and heavy loss on every job in connection with this item.

Plant Rental.—As mentioned before this should be covered by special paper.

Supplies.—This is an item which is often neglected as being a minor consideration. On certain classes of work it is really, instead, a very heavy item. The cost of packing, grease, hose, rubber boots and other rubber goods, should be given careful consideration and the contractor will save himself money by checking up his past work and arriving at a clear understanding of what such costs really are.

Running and General Repairs.—These should be discussed in connection with the use of plant, of plant rental, but in any case the contractor must understand that they are necessary parts of the cost of doing a piece of work.

Special Machinery.—On many contracts it is necessary to employ in addition to an ordinary contractor's plant some special form of machinery either purchased from a manufacturer or built by the contractor for the work. In either case plant rental is not a proper charge for this class of equipment. The entire cost of it less its scrap value must be charged to the one job on which it is used, otherwise a contractor may complete a large amount of work and find the entire profits tied up in machinery which has little value other than scrap.

Fuel and Power.—The cost of power especially varies so much in different localities that the bidder should acquaint himself carefully with the local conditions. If a large amount of fuel is involved careful allowance must be made for the hauling and handling of same.

Water.—This item often becomes a serious obstacle to the proper handling of work and is one that requires a great deal of attention. It sometimes adds very materially to the cost. In addition to this we wish to impress all contractors with the desirability of investigating the available water supply in connection with a given piece of work before making their figures.

*Cost Keeping.*—We cannot close the discussion of cost estimating without dwelling for a moment on the question of cost keeping. The fact that so many contracting concerns are closed out of business each year is a strong indication that something is not correct with the way construction work is figures. A good deal of it comes from neglecting a number of items which we have mentioned above and which do not appeal to some men as being of enough moment to give direct consideration to when making figures. Other trouble comes from not keeping careful cost data of work done and analyzing such costs.

It is not the purpose of this paper to go into detail regarding such things, but we believe that a contractor should avoid using manufacturers' statements of operating costs as well as any other stop-watch methods, as they usually spell loss if not disaster. A certain amount of work done per day with a crew operating at a certain expense per day never means that the division of that daily cost by that daily output is the unit cost of the item in question. There are delays and other things which so affect this price that it may be over one hundred per cent out from the actual cost when all things are taken into consideration.

* * *

## Not the Same

The Washington Star credits the late Mayor Gaynor with this criticism of a novelist who began with promise and became a "best seller":

"How did he start in to write?"

"With a wealth of thought."

"And how has he kept on?"

"With a thought of wealth."

# War Memorials*

By SLACK W. WINBURN, Architect

I WAS first asked to speak to you on "Trees as War Memorials". Then permission was very kindly given to change this to anything I might want to say concerning War Memorials.

I do not think it matters so much what form the memorial takes as it does of what the memorial is made to express. Mr. Moore, Chairman of the National Fine Arts Committee, says—"It may be a building or a flag pole, a statue, a fountain or a tablet. The memorial may serve some useful purpose, like a bridge or an art gallery, or it may be its own excuse for being. Communities often excite themselves unduly, and even wax acrimonious, over the choice of a form, neglecting entirely the weightier matter of the law."

Then if it is not the form that interests us first, let us see what is required to make a lasting Memorial to those who gave their lives for this great Nation of ours.

If it were only a matter of form and money, we might go to a bronze foundry, order a bronze tablet, with a certain inscription on it, put it in place with a bit of ceremony, and go on our way, feeling we had fulfilled another duty to God and man.

There have been many memorials erected throughout the ages, but few works of art. Then let us see what this spirit is that gives life to a work of Art.

There has never been a race of people who did not believe in a life above physical sense testimony. In man's attempt to express his concept of this spiritual, mental life, in whatever he did, we have the birth of Art. Primitive man takes the sounds he hears and sets them to time; after he has clothed himself for protection against the elements he embellishes his garments that they may speak of his ideals; he builds a building, but a house means something more to him than four walls and a roof and we are enabled to read in the result the life he is striving to express.

Everything we do to a certain degree, is a memorial to the thought back of it

All these things that men have done, have been just as lasting as the mind qualities they put into them. The world has had many schools of thought, claiming to tell of a life higher than the physical senses, and each has come down to us through the Art and Architecture of the time.

In all that has lived we find three immutable principals underlying it: The True, the Good, and the Beautiful.

Plato said, "Beauty in Art is the Splendor of Truth." Truth is the only real, and a deception, being untrue has no life to live. Those who believe in the lie express it consciously or unconsciously in whatever they do. How often we see about us some untruth claiming to be real. Have you not all seen concrete made to imitate stone? A galvanized iron cornice painted to represent stone or terra cotta? Have you never seen great and massive columns apparently of marble supporting great loads, that proved to be but hollow shells when tapped and but imitations of the material they represented? Now the real artist would accept each of these materials for what they truly are and use them to express the Good and Beautiful.

To be Good, a work of art must function properly in all of its parts. The Body is the most perfect work of art we have. Are we not disappointed when we view a dome on the exterior of a building and fail to find it on the inside? And witness the buildings throughout the country with all sorts of ornaments put there because they looked good on some other building.

* An address delivered before the War Mothers' Association, Idaho Falls, Idaho.

Beauty is a thing so infinite that man's limited concept would be but vain to attempt to define it. There are no set rules laid down that one might follow and be sure of a happy result. Beauty makes its own appeal. Some one has said after travelling through Europe, that to see beauty we must take it with us. So the Artist must have vision enough of the true man to play upon the chords of his heart. Beauty must be both good and true. How often we see a thing that seems beautiful at first, but when we find that its beauty is all applied for an effect, we turn from it with loathing. On the other hand we have all seen objects that hardly attracted attention at first, they were fitted so harmoniously into their surroundings, but as we learned them, what they stood for, they began to appear beautiful to us.

So we find that the things that have lived as memorials to the ideas for which they stand, are not always the most elaborate, nor do they represent the greatest amount of effort, but are the simple natural expression in some form of these ideals.

Immediately following the Civil War a plague of War memorials swept the land. Hundreds of Factory made soldiers and monuments were set up throughout the country. These have carried down to us only the commercial ideas that erected them. There is an attempt by many manufacturing concerns throughout the country to repeat this same error, but thanks to the efforts of the National Fine Arts Commission it is doomed to failure. This Commission, composed of the foremost artists of our time, giving their services without compensation, have agreed to pass upon any memorial proposed in the country, and are using every channel to give the Nation a higher view of Art.

Ignorance cannot create symbols for intelligence. Whatever we do, whatever memorial we erect, will but reflect our concept of the thing we are trying to commemorate. Let us look within ourselves, have we this great ideal clearly in mind? Have we left behind all pride, love of self-glorification, and is this memorial to speak only of the principle so many gave their lives for and not of us? Are we sure we are far enough away from smoke of battle to see it in its true perspective?

When we have considered these things, we are ready to think of a form to express them, or rather, we will find the form will grow out of and express our requirements.

As we think in terms of what we know, let us examine some of the War Memorials which have come down to us through time. The Kings of Assyria decorated the walls of their palaces with sculptures depicting their successful battles. The Egyptians also left some few records of their wars. But these were memorials to individual kings and are not really interesting to us as works of art.

The Greeks, who perhaps came nearer than any other people have ever come to expressing their ideals by means of their art, have left us a few war memorials. There is the colossal lion from Cnidus and the Nereid Monument both of which are in the British Museum. But there is one Greek war memorial we are all most familiar with and that is the Winged Victory of Samothrace, which commemorates a naval battle fought 306 B. C.

A great many of the American boys were privileged to view this wonderful monument as it stands today in the Louvre at Paris, with trumpet gone, without arms or head, and in a strange environment; but I am sure every man who beheld it could not help but feel anew in viewing that wonderful figure, with its poise, its sure forward sweep, the spirit that carried a great nation forward to victory in the cause of right.

The Romans used the spoils of war to glorify their individual leaders and have left a great many war memorials, the most interesting of which were some

forty arches of Triumph in Rome. But these were for the celebration of the individual leader whose personal pride and sense of power were paramount to the nation. They stand today monuments to the thought they were erected to commemorate, Imperialism. They are symbols of personal pride and egotism.

The Roman Emperors Trajan and Marcus Aurelius set up huge marble columns surmounted by statues of themselves, and with spiral bands of sculpture depicting scenes from their successful battles. Later Napoleon had a copy made of Trajan's Column cast from captured cannon and set up in the Place Vendome of Paris.

In the Arch of Triumph in Paris, erected by Napoleon to commemorate his victories, we have the arch carried to its perfection. It is even an intragal part of the city itself. One cannot stand in the Place de la Concord and look down the Champs d'Elysee to the Arch, as it stands there in its majesty, strength and beauty, without knowing that the four architects and sixteen sculptors who erected it, set themselves, not so much to praise Napoleon as to express the majesty and glory of France.

In America our memorials have not been erected to glorify the individual, but the principal the individual stood for. We have been absorbed in the building of the greatest Memorial the world has ever known, the Altar of Liberty, which is symbolized by democracy.

We have few satisfactory war memorials in this country. The Lincoln and Grant Memorials are not yet completed. The Sherman and Farragut Memorials in New York and the Shaw Memorial in Boston are considered of the highest type. The Washington Arch in New York is deemed our one satisfactory memorial arch, and was erected to commemorate a centennial. The Washington Monument in our capital was not completed until after the Civil War.

A short review of the world's great war memorials, shows us that none of them express our present day ideals. Truly we are living in a new age of thought and action. We are a far cry from the imperialism of a Roman Arch.

As thought expands into action it has infinity as its source. Then we shall not be bound by the forms of the past. According to the recent report of the Bureau of Memorial Buildings of the War Camp Community Service, there are some 254 various memorial projects under way throughout the United States. These are composed of Community Buildings, Auditorium and Civic Buildings, Club Houses, Municipal office buildings, churches, schools, Y. M. C. A. Buildings and various other projects. The question as to whether they will truly be memorials to the cause they were erected to commemorate will not be in the form they take but whether they be made to arouse in coming generations, feelings of honor, respect and gratitude for those who gave their lives for this great cause.

Those who did not return, laid down their material sense of life that Principal might live. To erect a memorial that will tell of this great sacrifice we should turn to our highest sense of Principal and truly make it a work of art.

As to trees and whether they could be made living testimonies to our gratitude for what has been done. When Truth is born to our understanding it becomes the Tree of Life. It is not death we wish to commemorate, but Life. It is the expression of our appreciation for being that we wish to live, as the highest we have gained so that those passing by may catch the vision and carry it on. We wish to tell the world that the war was more than sacrifice and destruction, but war with error that our vision of Truth might live .

Who has not beheld the giant of the forest as it held its great arms aloft expressing its appreciation for that great living principal Life, without feeling a sense of gratitude for being.

Many times those who served would seemingly be overcome by the enemy, the belief that life and intelligence was in matter, and as they went for days,

hungry, tired, cold, obeying only the voice of discipline, many times lost sight of the ideals they believed to exist and doubted the cause they represented. So what memorial would be more fitting to proclaim to the world, and those who returned, that America is a land of ideals holding the torch of Liberty aloft to the world, than great trees lining our highways and planted in our cities and parks?

In the heat of battle when a man fell, his comrades did not stop to mourn over him, but caught up the banner he carried, held it aloft again and pressed forward with increased determination to win. In the battle of life, if some seem to be taken, let us catch up the banner of law and order and go forward in the cause they fell fighting for, dedicating our lives anew to the great cause of right that whatever we do may be a memorial to this living principal.

In many places throughout the country they are advocating the planting of trees as the most fitting memorial to our soldiers and sailors. Have we not also an ideal field for this work? To start a movement for the roadside planting of the Yellowstone Highway, and so marked with various tablets along the way to commemorate the soldiers and sailors of the war.

To be a work of art it would be necessary to do more than simply plant trees on either side of the road. Care should be exercised in retaining and enhancing all desirable views. In many places charming vistas could be secured by framing them with the planting. Other times the planting might be made to screen undesirable views and to break up long monotonous stretches, and sometimes it would be desirable to make the road way itself the object of interest.

Such efforts could not help but bring from all who journey along the way to the park expressions of gratitude for this spirit and loving thought that gave it birth.

Another possibility would be tree planting within our city itself. By means of trees in the hands of an artist, we could have a city beautiful. The development of parks where we could go again to catch the great spirit of nature would be an incentive to higher thought and action.

I think we come nearer to catching the spirit of France in her parks than any place else. Here it is that you will find rich and poor, the cultured and uncultured, each evening walking among the flowers and fountains or stopping for long stretches before some work of art to drink in its beauties.

Whatever we do, let our motive be high, our conception clear, and our purpose noble, so that the Artist who takes the work may find only good within us to express.

That great Artist, John LaFarge said: "You do not judge a work of art; a work of art judges you." There will be no beaten path to follow, no precedent we can copy that will give us a true memorial It must grow out of our heart felt convictions, our gratitude for what has been done and our desire to carry on the work so well begun. The material symbol will return to dust, but the Truth we bring to light will live on as an eternal memorial to right.

* * *

## Sound-Proof Room for Babies in Theatres

The Park moving picture theatre, now being constructed at Austin, Minn., contains the last word in picture theatre construction. It is nothing less than a sound-proof, glass-enclosed room for mothers who have crying babies. In this room, which is in full view of the stage, mothers may congregate, each with her infant, and though the youngsters all cry in infantile chorus, the mothers may calmly enjoy the show, knowing that no one is disturbed and that the orchestra is not hampered in its efforts.

# Tax Exemption to Encourage Building

By W. R. B. WILLCOX, F. A. I. A., Seattle

IN your April issue, under title of "Tax Exemptions on New Dwellings," appears an article which opens interesting prospects for reflection. For instance, "The elimination of taxes from new buildings for a term of years would create at once a tremendous incentive for their construction," also, "Tax exemption on new houses during a limited period of years, as a means of encouraging construction," etc.

While evils which might follow a few years of exemption may be too familiar to require enumeration, I confess curiosity to know why incentive to construction would become harmful after immediate need for houses is supplied—that is, after "five or six years," which you mention as a reasonable exemption period. Would, in any circumstances, tendency in that direction be unfortunate? If so, the period of exemption might be left indeterminate, with authority for its termination, at the effective moment, placed in competent hands. Problems in taxation are often so puzzling that, without too great self-disparagement, one may admit inability to grasp at once the peculiar merits of the temporary feature of the plan.

You use the term "building" in the single instance quoted above, but your evident concern is with insufficient housing facilities. Hesitancy, therefore, in regard to exemption for "duplexes" and "apartment buildings" is rather inexplicable, as also is reason for suggesting the feasibility of entire exemption for detached houses and partial exemption for apartment buildings. Probably, you had not sufficiently thought out the full effect of the various kinds and degrees of exemption to express final judgment thereon. One should not draw inferences too hastily, but if exemption has a tendency to "tremendously increase construction," complete exemption of all types of buildings designed to provide housing would seem to be logical. Why not, in fact, re-state the proposal for exemption so as to embrace *all those classes of buildings which have fallen below normal needs of a community?*

As a guiding principle, that might too seriously disturb the customary initiative of the individual, as well as the natural interplay of the forces of supply and demand, but it occurs to me because in my own city at the present time there is noticeable lack of office space. Some people have remarked how similar the situation is to that in connection with housing—where generously rising rents seem too little inducement to provide adequate accommodations. While, obviously, a limit could be defined, the delicacy of the questions involved in a segregation of buildings for tax exemption cannot be denied.

Speculation on the subject, however, has certain fascination. Thus, one ventures to hope that in this day of rapidly multiplying motor vehicles, exemption for garages would help to solve the serious parking problems which face our cities. Then, too, strong arguments are raised in support of exemption for certain factory buildings, especially where citizens earnestly desire additional industries, or as frequently put, a larger pay-roll. To what degree, indeed, might tax exemptions for farm buildings and improvements counteract the much-to-be-deplored drift of country populations to cities? Warnings by all authorities, of disastrous consequences of continuation of the present movement, are so insistent, that some immediate, even drastic, action seems warranted. No social ailment today—not even lack of city housing—reveals so pressing a need for heroic treatment.

Concerning necessity for *unusual* safeguards about exemptions, to prevent construction of undesirable buildings, you are, I believe, unduly exercised. The effect of high costs, of which taxes are part, is to cheapen structure,

hence, relief from taxation should foster improvement in quality rather than otherwise. Certainly, in some instances high taxes have prevented erection of buildings altogether, or at least have led to their erection where taxes were less and economy, therefore, not so important. Precaution should be taken against lowering standards, but for the present I am not fearful that such results would follow, directly, from tax exemptions.

The figures you quote make clear the financial encouragement exemptions hold for prospective builders. If, actually, that is all that needs to be considered, the plan should receive quite general support, especially since anything so radical as a permanent modification of current practice is not proposed. Even were it to be adopted with expectation of permanence, it could, of course, be changed should it prove objectionable. Still, moderate measures are wise—they reassure the skeptical and timorous.

Architects, especially, should be interested to consider possible effects of tax exemptions upon their art. When one reflects that transition from the lovely walls of the old Norman farm buildings, unbroken by large and numerous windows, to the more open structures of later days was due almost solely to removal of a tax on window glass, he may hesitate to commit himself, unreservedly, to the belief that similar exemptions today are bound to benefit art. To that particular exemption, together with greater skill in the manufacture of window glass, and the attenuation of the column by use of steel, may be attributed the glassiness and the effect of structural insecurity which characterize many modern buildings. It but illustrates the unsuspected consequences to art of tampering with established economic customs.

However, so long as discussion of the subject is confined to theorists, hope of practical accomplishment falters. Examination of the proposition by representatives of business and financial interests, which you mention, is therefore, a favorable sign. We may feel sure that they will consider the plan from all angles before advising its adoption. In calling attention to tax exemptions proposed by the United States Chamber of Commerce for the merchant marine, a recent statement of the savings bank section of the American Bankers' Association expresses the opinion that "any person sufficiently informed to advise of tax policies must appreciate the evident fact that any extension of public subsidy through tax exemption can lead to no other end than the single tax on real estate, with the possible addition of a tax on income from personal service." Whatever of good or ill that ultimate possibility promises, its effect upon present sources of revenue undoubtedly demands thorough investigation, as a review, say, of a county and municipal tax list—since I happen to have one handy—reveals. Although a considerable list, it will repay perusal:

Horses, the tax varying according to age and type; mules and asses, stock cattle according to age, milch cows, bulls kept for breeding purposes, stock sheep and goats, bucks kept for breeding purposes, hogs, poultry;

Drays, trucks wagons and sleighs, carriages, cabs, hacks, buggies and cutters, bicycles, automobiles;

Watches, organs and melodeons, pianos, automatic and electric pianos and orchestrions, band instruments, violins, phonographs and musical boxes;

Sewing machines, household furniture, including clocks, rugs, gold and silver plate, paintings, statuary, engravings, etc., libraries, books, scientific instruments, etc;

Office and store fixtures, including safes, typewriters, adding machines, cash registers, etc., etc.;

Diamonds, jewelry, firearms, clothing, etc.;

Agricultural tools and implements, machinery and harness, mechanics' tools and implements;

Royalties and patent rights;

Threshing machines, hay presses, traction engines, etc., donkey and logging engines, pile drivers, hoisting engines, etc.;

Steamboats, naptha, gasoline and electric boats and launches, sailing vessels, dredges, barges, ferries, row boats, etc.;

Lumber per M, saw logs per M, shingles and laths, sash, doors, mouldings, pillars, finishing lumber, etc.;

Wood, coal, wool, hides, etc.;

Goods and merchandise, manufacturers' materials, including manufactured articles, brick, stone, building material, etc.; tools, implements and machinery, including engines and boilers;

Property of banks, brokers, bankers, etc., capital stock of incorporated banks, money;

Stock and furniture of sample rooms, saloons, etc., billiard and pool tables, bowling alleys, etc.; furniture, fixtures, utensils and appliances of hotels, restaurants, lodging houses, etc.;

Hay, wheat, corn, oats, barley and other farm products in hands of producer;

Hay, grain and other farm products in warehouse, elevator or cold storage;

Elevators, warehouses or other improvements on lands, the title of which is vested in any railroad company, improvements on lands held under the laws of the United States or leased from the state;

Property of gas, electric light, power, water, telephone and other public service concerns, including franchises;

Fish traps, trap and other locations, etc.;

Value of timber held separately from land, leaseholds;

All other items of personal property not included in preceding items.

One wonders at the necessity for such particularity in view of the comprehensive reach of the final clause! There must, of course, be recognized sources of revenue, but in our present housing predicament, the benefits to be anticipated from temporary exemption from taxation on things entering into the construction of a house, as well as on the finished house, would compensate largely for loss of revenue—such things as "lumber per M, saw logs per M, shingles, laths, sash, doors, mouldings, pillars, and finished lumber, brick, stone, building materials, etc." (That *art* would invariably be served by elimination of "pillars" from the list may well be questioned, but that is irrelevant here.)

Further benefits might accrue, in the housing impasse, from exemptions on "furniture, fixtures, utensils and appliances of hotels and lodging houses." Indirectly, housing bears the burden of the tax on "drays, trucks, etc.," "mechanics' tools and implements" used in connection with its construction. Still more indirectly—but why particularize! The ultimate impact of taxes is apparent upon a mere reading of the list. Except for a crisis, such as the housing shortage, the question of discrimination—other than that between necessities and luxuries—would be little likely to arise. In case of the latter, the architect, naturally, would favor removal of taxes from "paintings, statuary, engravings, etc." in interest of art in general. He might possibly include musical instruments of various kinds, although, on the theory that the dog tax tends to keep the canine population within comfortable limits, their taxation probably spares many a sensitive ear.

These considerations have arisen, primarily, from the housing situation, but other interests than housing have grounds for seeking exemption from taxes now imposed upon things essential to their undertakings. The subject in its broad aspects makes pertinent the forecast of the American Bankers Association in connection with subsidies. If, with the best intentions, increase from time to time in the number of exemptions, even for only a "limited period of years," is leading to a single tax on real estate, it is the part of wisdom for architects, no less than for other citizens, to fully inform themselves on the subject.

If the deduction is correct, that exemption for houses alone for only "five or six years" would have an effect so revolutionary as to "create at once a tremendous incentive for their construction," we must face the fact that general exemption of articles of human production would have important consequences.

The whole subject should receive frank and intelligent discussion that its intricacies may become clear to the average citizen, because in the end he is the one to decide the matter and the wisdom of his decision will depend largely upon the fullness of his knowledge.

That reminds me of what I took to be an inadvertence on your part—allusion to the proposal of tax exemption as a "recent idea." Perhaps you had in mind its limited and temporary application. As I recall, Henry George's theories, based upon the idea of exemption from taxation for all articles of human production, were published at least as long ago as 1880. Shearman, noted lawyer and man of affairs, about the same time, supported them in his book "Natural Taxation," while I think suggestions of the idea appeared in the writings of Spencer and Mill as far back as 1850 and of Adams Smith seventy-five years prior to that time.

The subject, also, was a live one in France in the days of Louis XVI, when as the American Encyclopedia states in its article on Turgot:

"He was made comptroller general of finance, and undertook to improve the financial condition of the kingdom by freedom of labor at home and of trade abroad, and by substituting for taxes on a multitude of articles, a single tax on land."

The article goes on to say that "the reforms were encouraged by the king, but were obnoxious to courtiers and many others." In reference to Turgot's "Reflexions sur la Formation et la Distribution des Richesses," Funk & Wagnall's Standard Encyclopedia contains the following:

"It is the highest development of the physiocratic school, with its excellences and some of its characteristic errors, as that agriculture is alone productive, and that there should be only one tax, that on land."

These measures, it seems, won opposition of the nobles, and the reference closes:

"Louis XVI was too weak to resist such pressure—and the end was that Turgot was dismissed—and France drifted rapidly into the great catastrophe of 1789."

The latter event evidently precluded, thus early, an experiment based upon a single tax on land, or land values, in some form. While the Standard Encyclopedia summarily characterizes the single tax on land as one of the errors among certain excellencies of the physiocratic doctrine, it might be worth while, in view of changed conditions—in view of the fact that the financial and industrial systems as we know them today have arisen since Turgot's time—to examine anew his recommendations, to discover, if possible, whether these changes have eliminated the particular evils which the ancient nobles and the Standard Encyclopedia seem to have found in them.

This, however, is beside the immediate point of your article. The deplorable housing situation is a challenge to civilization. If temporary exemption from taxation for houses, detached or otherwise, duplexes, apartment houses, or anything else, promises relief, no time should be lost in determining the immediate, likewise the eventual, consequences of its adoption. If the prognostication of the American Bankers Association is correct, it is time we summoned courage enough to say "Boo!" to the hobgoblin which the words "single tax" have conjured, get hold of the creature, dissect it, and see if there is really form and substance to it. Certainly we cannot afford to let it "shoo" us away from any avenue of escape from an intolerable condition until its true nature is disclosed. Then we shall better know how to handle it.

* * *

For good example Mr. Cole wrote on the chemistry board, "Do not light matches unless you extinguish them. Remember Chicago's fire!" The next day it had been altered to this effect: "Do not spit. Remember the Johnstown ood."

# Department of Safety

Conducted in the Interests of the Building Public and with the Co-operation of the California Industrial Accident Commission

## Defective Painter's Hook Kills a Worker

By J. J. ROSEDALE, Construction Engineer

ON September 23, 1919, while three painters were engaged in painting a three-story building on a suspended scaffold in San Francisco, one of the hooks supporting the scaffold broke, causing the men to fall a distance of 35 feet. The breakage resulted in the death of one worker and the injury of another, who was disabled for a period of six weeks.

Broken defective hook on the left which killed a worker and temporarily disabled another. The hook on the right was used on the same job and was found inadequate as it failed at a maximum load of 670 pounds.

Upon investigating the cause of this accident, it was observed that the broken hook was a square type, made of a very poor grade of wrought iron, which failed at the bend in the upper section. The material at the break showed that it was welded at this point and had been considerably overheated and burned, leaving a very small amount of sound material to hold it together.

A careful examination and test of this hook would have disclosed these defects and avoided this accident.

The Industrial Accident Commission requires that hooks for suspended scaffolds shall be made of high grade wrought iron, steel or equivalent material, and when formed to shape, must sustain a maximum load of 3000 pounds. A hook made to meet these requirements would cost only $5. The cost of this accident for compensation and medical fees was $5,203.06.

## Trench Cave-in Kills Worker

By J. J. ROSEDALE, Construction Engineer.

ON September 17, 1919, while a laborer was excavating a trench for the foundation of a four-story building in the city of San Francisco, the 2-inch sheeting collapsed, burying and crushing this worker to death. His age was 35 and he left a young widow with an unborn child.

Upon arriving at the scene of the accident it was found that the San Francisco Fire Department was engaged in rescuing the deceased, and after two hours of strenuous work succeeded in extricating the body from the bottom of the trench.

The trench was excavated at the side of an adjoining wall of a building in a loose sandy loam soil to a depth of 10 feet and had been opened up for a distance of about 60 feet. A width of 3½ feet had been maintained throughout its length. The trench was sheeted with 2-inch by 8-inch planks 8 feet long, placed horizontally and supported by 6-inch by 6-inch vertical posts spaced 8 feet center to center These posts only supported the sheeting at the ends and left 7 feet 6 inches of the sheeting unsupported between each pair of vertical braces. The horizontal strut braces supporting the vertical posts consisted of only 2-inch by 4-inch scantlings placed near the top of each post and none were placed in the middle or bottom of the trench. These horizontal braces were placed loosely between the posts and wall of the adjoining building, and were of no value as supporting elements. Owing to considerable pressure in the center of the sheeting between each pair of vertical braces, and inadequate horizontal strut braces to support these vertical posts, the trench caved in.

Sheeting and bracing in foreground collapsed, which resulted in killing worker.

This accident could have been avoided if the following precautions had been taken:

The vertical posts should have been placed at least 5 feet on centers and supported by 4-inch by 6-inch horizontal strut braces, placed at least 3 feet on centers and normal to both the wall and vertical braces, cleated and rigidly wedged. This method would have afforded ample protection against a cave-in and would have only increased the cost $25 for sheeting and bracing the trench, saved a life and $4,446 which was paid the widow for compensation.

*
* *

## Modern Transformations—Architectural Possibilities in Inartistic Old House

THERE was never a time when the services, tastes and special knowledge of the trained architect were more needed or more in demand. The carpenter and builder have for years been consulting experts in the building of thousands of suburban homes and farmhouses, and let us give them credit, at least, before the jigsaw era, for many beautiful and charming old houses, says a writer in Architecture, who continues:

"Following the building shortage in these later years has come an appreciation of the fact that any old house, or new, be it as hopelessly ugly as it may, has possibilities. Architecture has shown many instances of 'before and after," of old ramshackle, barn-like structures, altered into most delightful homes. Old barns have been made over into charming studios and living quarters, woodsheds incorporated into the redesigning of an old farm house. Everywhere is shown a wider appreciation that nothing is impossible to the architect of taste and skill.

"The old and hopelessly ugly city brownstone house and the little two or three-story brick house or stable on a side street have been made into artistic and attractive apartments or studio buildings.

"It is to the architect that we owe this renaissance and we have only made a beginning toward the development of the city beautiful from old and unsightly and out-of-date structures. Lest some should say that we are dealing with merely idealistic matters, with our own desire for better things artistically, we remark that in every instance these 'artistic' improvements have proved the very best of business in increased rents and more desirable tenants.

"If the cost of new buildings has deterred many from carrying out their long cherished dream of owning their own home, there is abundant opportunity almost everywhere for the alteration of old places at very moderate cost. And old houses nearly always offer the nucleus of a more substantial structure than many hurriedly-built modern houses put up in quantities for speculative purposes.

"In considering a new house the architect can very often effect a large saving by taking full advantage of local materials. The familiar stone houses of Pennsylvania are greatly admired, and throughout the New England states there are abundant reasons for using the local stone. It is right at hand and the transportation cost is a minimum one. An instance of the effective use of local stone came to mind some time ago in the purchase from an old Connecticut farm of the moss-covered stone fences that for generations had testified to the hard labor of the first owners of the fields they inclosed. They added a picturesque and inexpensive note to a big fireplace and outside chimney."

## Institute Convention at Washington, D. C.

THE Pacific Coast received recognition at the recent convention of the American Institute of Architects in Washington, D. C., when Mr. W. B. Faville of Bliss & Faville, San Francisco architects, was elected second vice-president, and Mr. Charles H. Alden of Seattle was elected a director for three years. The other officers named were Mr. Henry H. Kendall of Boston, president; Mr. Charles A. Favrot of New Orleans, first vice-president; Mr. D. Everett Waid of New York, treasurer, and Mr. Wm. Stanley Parker of Boston, secretary. Besides Mr. Alden, Mr. Abram Garfield of Cleveland and Mr. N. Max Dunning of Chicago, were elected directors.

The Coast chapters were represented by Messrs. Louis Baeder, G. C. Field and Carl F. Gould of Seattle; Ellis F. Lawrence of Portland; F. A. Rosenheim and J. J. Backus of Los Angeles, and W. B. Faville, John Galen Howard, Ernest Coxhead and Arthur Brown of San Francisco.

No action was taken by the Institute toward rescinding its decision to support the national board of jurisdictional awards as requested by the Southern California Chapter. A resolution offered by the delegates from the Los Angeles Chapter, Messrs. A. F. Rosenheim and J. J. Backus, was ruled out of order. It was stated that the action of the convention did not involve the question of unionism and that the agreement to support the national board of jurisdictional awards was made to put an end to strikes which have frequently resulted from disputes between crafts as to which should do certain work. Members of the Institute are not committed to the designation of unions but are merely expected to follow the division of work as set forth in decisions of the board in writing specifications.

A report made by the post-war committee indicated that members had ceased to take a deep interest in the problems which it had been appointed to consider and that they are now too busy to give attention to questions propounded to them by the committee. Apparently the conditions which called into existence the post-war committee have largely disappeared.

The report of the board of directors adopted by the convention contained a ruling that members of the Institute may undertake the handling of construction contracts on a fee basis independent of architectural service but may not handle contracts on a fixed-price basis. This ruling was made in response to many requests for information on the subject.

A proposition was submitted by the Cleveland delegation to fix the minimum fee for architectural service at 8 per cent and it went over to the next convention.

Delegates representing six or eight state associations of architects were present by invitation and each of the representatives made addresses. The sentiment of the convention favored support of the state societies as a stepping stone to the Institute.

In his address of acceptance as president, Mr. Kendall urged that greater efforts be made to increase the membership. During the last year there was a net increase of only 83 members. He said an effort should be made to bring every reputable architect into the organization. Mr. Kendall also called attention to the need of some changes in the present fee system for architectural service, favoring a plan adopted by many architects in Boston of a flat fee for the architect and remuneration for all expenses involved in preparing plans and supervision of work.

* * *

## A New City on San Francisco Bay?

A NEW marine terminal of such size as to be classed as a commercial or industrial city in itself has been proposed for San Francisco Bay and is described and advocated in The Pacific Marine Review by Messrs. B. F. Cresson, Jr., and C. W. Staniford, consulting engineers. The terminal would be

constructed in what is now shallow water at Berkeley on the east shore of the harbor, looking directly out to sea through the Golden Gate and projecting outward toward that historic passageway for two miles or more. This plan, the writers assert, will go far toward providing the additional shipping facilities now generally thought to be necessary to prepare for the growth in manufactures, industry, and commerce that is confidently expected to follow close upon opportunity. The time has now arrived, they say, when active steps must be taken toward constructing wharfage and warehouse facilities for our ever-increasing merchant marine. Most cities have restricted their activities simply to the construction of docks, without developing storage and terminal facilities. This is due sometimes to lack of foresight, but very often to the lack of physical opportunity. We read:

"San Francisco has retained its leadership on account of its commanding position on San Francisco Bay, the world fame of which, as regards size, depth, and security from storm, together with its two great feeding tributaries, the Sacramento and San Joaquin rivers, bids fair to retain for the city its present supremacy as the maritime metropolis of this coast.

"San Francisco may best expand its ocean-trade possibilities, and thereby increase its assets in other lines of commercial activity, if it will take advantage of the natural resources of the bay distant from the city itself, and establish terminals whereby deep-water shipping may be served with direct rail connection to the transcontinental railroads, and where warehouse and storage facilities may be provided, fortified with the addition of sufficient back land for the creation of manufacturing establishments on a large scale.

"An ideal site, combining all these factors, lies along the east bay water-front at the city of Berkeley. . . . One of the reasons which has retarded the more extensive use of machinery for handling freight direct from railroad-cars to deep-draft vessels has arisen from the unwillingness of the operator to surrender necessary space, which has been not only produced in a very costly manner on piles, but which was also greatly needed for storage. The Pacific Port Terminal is so designed that all these difficulties are overcome and the necessary room will be created in the most economical manner by hydraulic dredging through pump and fill. In this way land is produced, fulfilling the ordinary function of the deck floor in a covered pier, and, instead of being costly in construction and expensive in maintenance, is a solid surface, leveled, ready for the reception of tracks and for inexpensive foundations for buildings. . . . . .

"The lack of sufficient warehousing facilities and adequate industrial or factory assets, together with the lack of proper use of the best handling machinery, has been caused by the fact that American seaports have been built up piecemeal, each expanding with the growth of the city and, in almost all cases, in very restricted areas; hence most of them present simply pier systems, with barely room for the reception of the actual freight between steamers and scarcely enough room for the ships to operate in the slips. . . . . .

"The plan shows harbor works, warehouses, and factory developments worked out in an ideal way. This will require many years for its consummation, but the plan is arranged so that a beginning may be made along the water-front immediately and future construction work follow gradually along exact lines. . . . . .

"It is on account of the necessity for large filled-in areas for development that the plan has been adopted in the way it has — namely, the creation of the long wharfage faces of upward of two miles on each side of the first unit with a distance of three thousand feet between them, flanked by three thousand feet of waterway on each side of the wharfage face. Primarily, these wide channels are necessary for the creation of the fill, but they will become of immense advantage in the future should the need for wharf space become very acute; then these wide waterways may be utilized in the building of piers."

Every encouragement in the way of rail facilities and direct unloading devices should be provided, the writers go on to say, to encourage the direct handling of commodities between rails and ships. For the interior movements, two types of machinery should be used: First, load-carrying storage-battery trucks for the shorter movements; and second, storage-battery tractors and trailers for the longer movements. Conveyors and tiering machinery should also be provided. Each warehouse, each factory, and each of the public-service buildings has a direct rail approach.

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## *THE PRACTICE OF LANDSCAPE ARCHITECTURE*

The scope of the profession of Landscape Architecture is so often confused in the public mind, with the limited services of knowing plants and knowing how to plant, that the Pacific Coast Chapter, American Society of Landscape Architects, believes the following quotation from their official statement may be of value to the public, and the Architect and Engineer is pleased to assist the Society in its campaign of education:

Landscape Architecture is the art of fitting land for human use and enjoyment.

The Landscape Architect designs and advises regarding the arrangement, and directs the development, of land and the objects upon it in connection with private grounds and gardens, institutions, public parks, playgrounds and squares, cemeteries, streets and parkways, residential communities, and problems of city and regional planning.

A Landscape Architect in good professional standing is one who has artistic ability and thorough technical training for dealing with the problems which he undertakes and whose remuneration is an openly stated compensation received directly from his client for services rendered, and not a commercial profit on materials supplied or labor employed.

To the extent agreed upon with his client, he gives oral and written advice, prepares or directs surveys, develops general designs, and working drawings (such as general construction plans, grading plans, planting plans, and incidental architectural and engineering plans), and specifications; supervises the execution of his plans; and co-operates with experts in other fields, including architecture, civil and sanitary engineering, and forestry. He should be consulted as soon as the proposed development is under consideration.

He acts to a reasonable extent, or as agreed, as his client's agent in selecting and ordering materials and in issuing instructions for the execution of work by contractors or others, and acts in a judicial capacity with respect to the relations between his client and suppliers, contractors, or laborers with whom on his advice the client has entered business relations.

In accepting employment he undertakes an obligation to protect his client's legitimate interests to the best of his ability in the matters confided to him, so long as his employment continues. He is not pecuniarily responsible for the quality or quantity of the results attained under his direction, especially for the failure of plants to grow or to be delivered promptly, nor is his right to compensation for services rendered in accordance with a proper authorization, dependent upon his client's satisfaction with these services.

The benefits resulting from retaining the services of a competent Landscape Architect are normally more perfect utilization of ground space, greater convenience of use, a higher degree of beauty, the saving of much trouble and annoyance to the owner in the accomplishment of his desires, and often an actual saving in cost, both of development and of subsequent maintenance.

## *THE RACE BETWEEN FIRE AND BUILDING CONSTRUCTION*

Construction of fire-safe buildings is a national duty which is second to none. Moral obligation to protect the lives and property of others is too great to be evaded or ignored. It is poor consolation to reflect that the general public does not realize that while we are putting forth every effort to obtain more buildings, we are burning up in a few years as much as we build in one. Because of the present urgent need of more buildings of all kinds,

our appalling fire loss is a national calamity.

The following table, prepared by Concrete in Architecture and Engineering, shows the value of new buildings constructed in the United States and Canada during each of the past ten years, and the total fire losses during the same period, the last column showing the ratio of fire losses to value of new buildings.

| Year | Value of New Buildings |
|---|---|
| 1919 | $1,326,936,700 |
| 1918 | 445,549,500 |
| 1917 | 728,506,400 |
| 1916 | 1,057,350,500 |
| 1915 | 877,845,400 |
| 1914 | 838,121,200 |
| 1913 | 936,685,800 |
| 1912 | 1,010,958,500 |
| 1911 | 947,770,100 |
| 1910 | 974,040,400 |
| Average for 10 years | $914,376,500 |

| Year | Fire Losses | Ratio of Fire Losses to Value of New Buildings |
|---|---|---|
| 1919 | $269,000,775 | 0.203 |
| 1918 | 317,014,385 | .712 |
| 1917 | 267,273,140 | .367 |
| 1916 | 231,442,995 | .219 |
| 1915 | 182,836,200 | .208 |
| 1914 | 235,591,350 | .281 |
| 1913 | 224,728,350 | .240 |
| 1912 | 225,320,900 | .223 |
| 1911 | 234,337,250 | .247 |
| 1910 | 234,470,650 | .241 |
| Average for 10 years | $242,201,600 | 0.265 |

The fire losses shown in the table are the figures reported by the leading fire insurance companies, as published in Bradstreet's (New York) of January 10, 1920. These show the actual adjustments made. They do not take account of the fact that buildings are never insured for their full value and that many losses are not covered by insurance. The building values are obtained by combining data published in Bradstreet's of January 17, 1920, covering 120 leading cities from 1910 to 1919, with a similar record covering 171 cities for 1918 and 1919, published by the American Contractor, Chicago. For the past two years the figures from 171 cities are 15 per cent higher than from 120 cities. For the period from 1910 to 1917 the Bradstreet's table was accordingly increased by 15 per cent in order to put the entire column on the basis of 171 cities.

This table shows that during the past ten years the loss of buildings by fire, due largely to unsafe construction, averaged 26.5 per cent of the value of new buildings constructed in 171 cities during the same time. Looking at the figures from another angle, we see that with all our record breaking building activity during 1919, the *construction* in 171 cities during that year is no more than the *destruction* by fire during the past five years. Even this poor showing is better than the average for ten years, which indicates that we burn up practically the value of one year's building in less than four years.

## *Notes and Comments*

**American Architects Opposed by their Canadian Brothers**

Canadian architects are finding fault because American architects have lately become their competitors and are getting some big work that the Canadians think belongs to them. Under the caption, "Is It Fair for Canadian Concerns to Employ Foreign Architects?" the Contract Record, a trade journal published in Toronto, answers the query negatively and goes on to say that

> Canadian architects have on many occasions strongly protested against the employment of American architects on Canadian work. In some instances, the retaining of specialists, such as architects who have specialized on planning hospitals, may be justified, but it is generally felt that the engagement of architects from across the border on ordinary work is unfair to Canadian professional men, especially in view of the obstacles which are placed in the way of the employment of Canadian architects in the States.
>
> It is not surprising that American firms who build branches on this side should prefer to engage architects who have previously erected buildings for them in the States, and who presumably are better acquainted with the exact requirements of their clients than Canadian architects. The chief complaint, however, is directed against the giving of retainers by Canadian firms, who are making their profit out of people in this country, and who rely on Canadian business to keep them going. If such firms desire the support of our people, then, in fairness, they should support Canadian professional men when opportunity serves. In two or three recent jobs in Montreal, American architects have been engaged—one instance is that of an institution of a national character, with Cana-

dian capital, Canadian directors, and relying on the Canadian people for business and consequently for its dividends. In another instance the Canadian public have been asked to subscribe capital for the extension of the enterprise, an extension which is to be constructed from plans drawn by an American architect.

From the contractor's supplies firms' point of view, the engaging of outside architects is by no means satisfactory. American architects naturally specify materials with which they are familiar, and, if we are to rely on the statement of Canadian supply houses, this too often means that Canadian materials are ignored, and that American sub-contractors are brought in to the loss of home firms.

Some architects do not take the views outlined above. They affirm that competition from any source is likely to result in much better work; that some of the finest buildings here are the result of work done by Americans; and that if the latter can give better service than our own professional men, then we cannot expect to obtain commissions for the highest class of buildings. They also point to the first class work done by Canadian branches of American contracting firms, and argue that under the stimulus of competition, Canadian contractors have made splendid progress in their business. Without such competition Canadian contractors would not have reached the point at which they now stand.

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**Bond Market Delays Building Construction**

The bond market has lately taken an unfavorable turn and in a number of instances proposed public improvements have been abandoned through failure of banks and brokers to take up the bonds. School work especially has been hampered. Efforts are now being made by some communities to induce contractors bidding on the work to take their pay in bonds and this plan is working very well in a number of instances. Unfortunately, however, few contractors are in a position to take bonds, except on the basis of a liberal discount on top of present construction costs that is not acceptable to the public except under great stress.

An increasing number of bond issues recently submitted have failed to carry, indicating a disposition on the part of the public to defer construction work and public improvements requiring bond issues to a more propitious day. Whether this disposition to defer necessary public work is wise is debatable. There is no assurance that a more propitious season is not still very remote. Deferring of needed public improvements since the war has been costly to many communities; in some instances it has bordered on the pathetic. It is far better to fix the rate of interest on bonds so that they may be readily disposed of and permit construction work to go ahead than to wait.

It seems to us the banks in the communities where bond issues have been voted should finance these projects instead of depending so much on outside capital. The banks, too, have been calling in their loans, and the fact that they are not encouraging new building loans has had a tendency to impede new construction work to a considerable extent.

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**Loss of Life from Fire and a Possible Remedy**

Two hundred and thirty thousand lives were lost from fire in ten years. Previous estimates of 15,000 fatalities yearly were shattered when the subject of fire losses was carefully reviewed at a recent meeting of the Committee on Cooperation with the National Board of Fire Underwriters, appointed by the Fire Marshals' Association of North America.

The original figure was astounding enough, but the final estimate certainly indicates the necessity for a painstaking study and enforcement of proper fire protection.

We read lurid tales of the Spanish Inquisition which history tells us exacted an awful toll of lives and left the curse of three centuries in its wake. The perpetrators of these ignoble deeds claimed about 1000 lives in a year. Think of the folly of allowing a loss of life 23 times as great going unchallenged each year in the United States alone.

The proper remedy, of course, is to eliminate the cause—the fire. This cannot always be accomplished, but proper methods for confining the fire surely can be effected.

In dwellings where so much of these terrible losses occur, the major structural material is wood. Relatively

lumber is quite economical. Steps must then be taken not to prevent its use, but to properly protect it from the flames. Ninety-five per cent of these strictly preventable fires start inside of the house where the lumber is universally predominant. Since it is common sense that fires start in a few most vulnerable points, these should be protected so as to fight the fire where it starts.

In the World War, America lost but 40,000 lives in battle, in 18 months. Twenty-three thousand lives as a yearly fire toll in times of peace is too appalling to go unheeded. The conflict was considered a live issue, however, and the populace was awed by the casualties. Publicity of the right sort will drive a similar lesson home and tend to decrease the fire loss. But to wait altogether for public education in the matter would be national criminal neglect. The building profession must learn the lesson first—cover the vulnerable points with metal lath or some similar non-burnable material, and insist that the owner follow good advice. The good physician doesn't hesitate to specify and insist on the proper remedy no matter what the cost. Fortunately, however, the cost of protecting the vulnerable points adds less than 1 per cent to the building and greatly increases the safety of the owner's greatest possession—his family.

## San Francisco's War Memorial

THE following is an outline of an address by Mr. Willis Polk, delivered to the faculty and students of the California School of Fine Arts, in San Francisco, Friday evening, May 14th.

All have heard the old story of the bully who disputed the sidewalk in Jamestown with George Washington. The bully said, "I never get out of the way of a blackguard." George Washington, with his best smile and in his most amiable manner, politely stepping aside, replied with a gracious wave of the hand, "I always do."

It was said that we were too proud to fight, but we did!

We entered the war to make the world free for Democracy. Up to date it appears that the war has only made part of the world free for Bolshevism. But have no fear, the war has made several million Americans sit up and take notice. There will be no Soviet Bolshevism, no autocratic rule in this country; the spirit of Democracy will not perish from the earth—the American Legion will attend to that.

The American Legion is going to build in San Francisco a monumental group of buildings in memory of the men and women, soldiers, sailors and civilians who died that Democracy might live. This group of buildings to commemorate the victory of Democracy will be a nurturing place for all the highest ideals of a free people. It will be the home of the Fine Arts—painting, poetry, sculpture, music and architecture. It will be a living temple for those ideals for which we waged the war!

The faculty and students of the California School of Fine Arts and their successors will find in this memorial a home and be provided with facilities of study. Will they be worthy of it? This year your student body was awarded the out of ten of all the honors available to art students throughout the country. Next year you ought to get seven out of ten. The year after eight out of ten and thereafter ten out of ten, for California is really and truly the true home of real art.

In the War Memorial, the Art Association will have its galleries, the school its ateliers. Students from all the world will, in time, seek this school for instruction, rather than will our students go forth for enlightenment. That is, if nature, temperament and determination are no less strong with us than were these characteristics with the Egyptians, Greeks, Italians and other predecessors of present day ideals of civilization, order and art.

As far as the students here tonight, and the faculty, too, for that matter, are concerned, it must be remembered that success in any vocation means patient, unending plodding. There is no short cut to success. Impressionist, cubist fads are entertaining, but usually are uninstructive and detrimental to healthy artistic development. The student must study the methods of the old masters, not to copy them, but to seek inspiration.

Michelangelo, Rubens, Rembrandt, Raphael, Leonardo, Velasquez—all the masters were artisans as well as artists. Their work was complete to the last detail.

Can you match the incomparable finish of the winged Victory of Themathrase or the immortal sculptures of Phidias, with the incomplete and unfinished works of Rodin? I say, No, a thousand time, No!

## When Strikes Come

MR. Speaker, Honored Legislators and all the Lobbyists within the reach of my voice, I rise to interrogate: Just where does labor leave off and capital begin? Who looks after the rights of the disorganized you-an'-me proletariats in between? I belong to the Majority Party of the Men-Who-Pay the-Bills, and I am getting sore on languid labor and corpulent capital. I don't wear overalls and haven't a silk hat! I can't afford to own a yacht, and I can't afford to go on strike, although I have worked hard for twenty years.

I have a family and I am more or less respectable. I pay my bills on the first of the month, likewise I pay town, state and national taxes. I have never been confined in a jail or in any institution supported by public funds. I am American born, with all the rights of citizenship, including protection—especially protection at home. I want to know what the Government of the U. S. A., apart from political "necessities," offers as a permanent and orderly cure for these periodic eruptions of strikes. If capital is to blame, what's the remedy? If labor is to blame, what's the remedy?

Or is the whole system rotten? Does the one squeeze the other when the opportunity comes, just because he can? I'm only the Man-Who-Pays the-Bills. Yet I know my group of men is larger than the other two groups combined. I also know I'm the season-after-season-

(Continued on Page [illegible])

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# With the Architects

## Building Reports and Personal Mention of Interest to the Profession

### Opens San Francisco Office

Mr. Archie T. Newsome, formerly with Messrs. Bliss and Faville and later engaged in making interior designs for the de Wolfe apartment house, has opened offices for the practice of architecture in the same offices as occupied by Messrs. Sidney B. and Noble Newsome, in the Nevada Bank building, San Francisco. Mr. Newsome is preparing preliminary drawings with Mr. Harry Merritt for a large San Francisco apartment house, details of which will be made public shortly.

### Designing Oakland Schools

Mr. C. W. Dickey, in charge of the Construction Department for the new school buildings in Oakland, is fortunate in securing the services of such well-known San Francisco architects as Mr. John O. Lofquist of Shea & Lofquist, Mr. Irving F. Morrow of Morrow & Garren, Mr. Walter Parker and Mr. John Davis Hatch.

### Messrs. Reed and Corlett Busy

New work in the Oakland office of Messrs. Reed and Corlett includes a three-story reinforced concrete factory for the California Peanut Company; a four-story warehouse at Sixth and Franklin streets, for the Zellerbach Paper Company, and a one-story warehouse, 110x200, for the Howard Company.

### Goes to Los Angeles

Mr. W. O. Raiguel, for some time head draftsman for Mr. John Galen Howard and prominent in architectural circles in San Francisco, succeeds Mr. Oswald Spier as chief executive for the Gladding, McBean Company in Los Angeles. Mr. Spier has accepted a position with the National Terra Cotta Association.

### North Beach High School

Mr. John Reid, Jr., First National Bank building, San Francisco, has completed plans for the new North Beach High school to cost $650,000, and bids are being advertised. Mr. Reid is working on plans for the new Mission High school, which is to cost $400,000.

### Dinuba High School

Mr. Ernest J. Kump, Rowell building, Fresno, is completing plans for a new building for the Dinuba High School District, which will cost $125,000.

### Olympic Club Building

Messrs. Lewis P. Hobart and John Baur, associated, have completed plans and a contract has been let to McLeran & Peterson, for a four-story reinforced concrete loft building to be erected at Post and Mason streets, San Francisco, for the Olympic Club. The Johns Manville Company has leased the entire building.

### Addition to Crossley Building

A three-story Class "A" addition is to be built to the Crossley building, New Montgomery and Mission streets, San Francisco, from plans by Mr. Mel I. Schwartz, Nevada Bank building, San Francisco. The addition will make the building five stories high. Improvements are estimated to cost close to $250,000.

### San Francisco Market Building

Mr. Smith O'Brien, Bankers Investment building, San Francisco, has completed plans for a one-story basement and mezzanine floor Class "C" market building, 75x110 to be built on Mason street, San Francisco, at an estimated cost of $50,000.

### Fifteen-story Office Building

Mr. Benjamin G. McDougall, 301 Alta building, San Francisco, has prepared plans for a fifteen-story Class "A" office building to be built in San Francisco for an insurance company, at an estimated cost of $1,250,000. There will be 644 offices.

### Elk Grove School Building

Mr. William H. Weeks, 75 Post street, San Francisco, has been appointed architect of the proposed new $125,000 high school building at Elk Grove, near Sacramento.

### Stockton Lodge Building

Mr. Ralph P. Morrell, architect of Stockton, has completed plans for a $75,000 lodge building and moving picture theatre for Stockton Lodge of Odd Fellows.

### New Gilroy Theatre

Messrs. Reid Bros., California Pacific building, San Francisco, are preparing plans for a moving picture theatre and lodge hall for the Masonic Temple Association, Gilroy.

### Architects Granted Certificates

The following have been granted certificates to practice architecture in this State:

Samuel Heiman, 57 Post street, San Francisco.

T. L. Pflueger, Lick building, San Francisco.

E. M. Sharpe, Rialto building, San Francisco.

Edward G. Garden, Flood building, San Francisco.

### Mr. Narbett to Design Richmond Schools

The Board of Education of the City of Richmond has appointed Mr. James T. Narbett architect and superintendent for all the schools to be built under the recent bond issue that was carried by a vote of five to one. The Richmond High School Board has also commissioned Mr. Narbett to prepare plans for additional units to the high school.

### Opens San Diego Office

Mr. W. F. Douglas has opened offices for the practice of architecture in the Central Mortgage building, San Diego. Mr. Douglas has recently completed plans for a country house near Colorado Springs and plans are in course of preparation for remodeling a large country estate at Grassmont, near Madame Schuman-Heinck's place in San Diego county.

### Garage and Bank Building

Mr. Fay Spangler of Santa Maria is preparing plans for a $35,000 auto sales building and garage for the Buick agency in Santa Maria. Plans have been drawn by the same architect and construction has been started on a branch bank for the Bank of Santa Maria at Orcutt.

### $275,000 Loft Building

A contract has been let at a fixed fee to George Wagner, to erect a five-story reinforced concrete loft building at First and Mission streets, San Francisco, for the Chas. C. Moore Company. Messrs. Meyer and Johnson are the architects. The building will cost $275,000.

### Concrete Office Building

Messrs. Weeks and Day, architects in the Phelan building, San Francisco, are preparing plans for a two-story and basement reinforced concrete office building for the Pacific Coast Steel Company at South San Francisco.

### $42,000 School Building

Messrs. Wollett and Lamb, Hagelstein building, Sacramento, have completed plans for a two-story reinforced concrete and frame grammar school to be erected in Orland, Glenn County. The structure will cost $42,000.

### Prize Winners Stockton Fair Ground Project

The Supervisors of San Joaquin county have accepted the drawings of Messrs. Wright and Satterlee, architects of Stockton, for San Joaquin county's $1,000,000 fair ground project.

The recommendations of the Advisory Committee were adopted as follows:

First prize—Wright & Satterlee of Stockton.

Second prize—Losekann & Clowdsley of Stockton.

Third prize—Cotton & Company, George M. Cantrell and Albert B. Strotthoff of San Francisco.

Fourth prize—H. Y. Davis (W. F. Mellin, assistant), of Stockton.

The winner will receive compensation through regular architect fees for preparing permanent plans for the various units of the scheme. Second prize brings $300, third prize $200 and fourth prize $100.

### Hospital Competition Decided.

The jury in the competition for a new county hospital in San Mateo county recently awarded first prize to Mr. W. H. Toepke; second prize to Mr. Will D. Shea, and third prize to Mr. E. L. Norberg, all San Francisco architects. Mr. Frederick H. Meyer was the architect named by the Chapter to act on the jury. Mr. Meyer says that none of the drawings fulfilled the actual needs of the hospital but were probably as satisfactory as it was possible to make them with the program that was provided. The absence of a professional advisor undoubtedly accounted for the poor program. The new hospital will be constructed of reinforced concrete, and will cost $150,000.

### Flat Building

Mr. E. E. Young, 251 Kearny street, San Francisco, is preparing plans for a two-story frame and plaster flat building to be erected for Mr. C. W. Higgins on Cherry street near Washington, San Francisco. The building will contain two six-room flats and will cost $15,000.

### Brick Residence

Mr. J. C. Austin, 1125 Baker-Detwiler building, Los Angeles, has completed plans for a large residence to be erected on Los Feliz road, near Vermont avenue, for Mrs. C. E. Wiswall. The house will be of English design and will contain twelve rooms.

### Orange City Hall

Messrs. Farrel & Anderson, I. W. Hellman building, Los Angeles, are completing plans and specifications for a new city hall building for Orange, Orange county, for which bonds of $80,000 have been voted.

### Addition to Elks' Building

Mr. Ralph Wyckoff of Salinas has prepared plans for additions and alterations to the Elks' building, Salinas. The improvements are estimated to cost $35,000.

### E. C. Hemmings Busy

Mr. E. C. Hemmings, architect of Sacramento, has prepared plans for a $25,000 one-story reinforced concrete addition to the California Milk Producers' plant at Seventeenth and B streets, Sacramento. Mr. Hemmings has plans ready for figures for alterations and additions to two grammar school buildings in North Sacramento.

Plans for the new grade schools in Sacramento, which are being prepared by Messrs. Hemmings, Peterson and Huddnut, Inc., will not be ready for figures for some time. Preliminary work only has been done on the plans. The firm has offices in the City Library building.

### Santa Clara High School

The Board of Education of the town of Santa Clara has commissioned Mr. W. H. Weeks, 75 Post street, San Francisco, to make a study of the present school buildings. The board contemplates a bond election to finance additional improvements, including a new high school, altering the present one, and remodeling and adding to the grammar school. It is estimated such improvements will cost $200,000.

### Martinez School Bids Rejected

After taking bids twice the Alhambra High School District, Martinez, has indefinitely postponed the matter of building a new school house and all bids have been rejected. Mr. A. A. Cantin was the architect. Had the contractors been willing to take some of the bonds the board would probably have authorized construction of the building.

### Stucco Residence

Mr. Alfred Henry Jacobs, 110 Sutter street, San Francisco, is preparing plans for a two-story frame and plaster residence and garage for Mr. Harry Bercovich. The building will be erected in Claremount Court and will contain nine rooms.

### $20,000 Frame Gymnasium

Mr. F. J. De Longchamps, Gazette building, Reno, Nevada, is preparing plans for a gymnasium building for the Carson City High School District. Bonds of $20,000 have been voted to finance construction.

### City Landscape Architect

Landscape Architect F. N. Evans of Urbana, Illinois, recently employed by the city of Sacramento, has written he will assume his duties July 1st. The office pays $250 per month.

### Bank Building

Mr. J. W. Dolliver, 110 Sutter street, San Francisco, is preparing plans for a one-story reinforced concrete bank to be erected for the Bank of Tomales in Marin county. The building will cost in the neighborhood of $25,000.

### Personal

Messrs. Willis Polk and R. W. Kraft announce that Mr. L. Gerstle Mack has become a member of the firm of Willis Polk & Co., Hobart building, San Francisco. Other members of the firm are Mr. T. Ronneberg, Structural Engineer, and Mr. Geo. E. Atkins, Mechanical Engineer.

Mr. John C. Black, landscape architect and engineer, Tacoma, has gone to Chicago to take an editorial position on "Engineering and Contracting."

Mr. Earl A. Roberts, architect, now located in the American Bank building, Seattle, is to take up quarters at 1056 Empire building.

Mr. B. Marcus Priteca, Pantages building, Seattle, is designing and has in process of construction five theater buildings for the Pantages Theater Corporation. The estimated cost of these theatres is $4,000,000, the largest being in Los Angeles. The others are at Kansas City, Memphis, Fort Worth, Texas, and Salt Lake City.

Mr. H. H. Whiteley of Los Angeles, California, formerly 420 Story building, has opened new offices at 520 South Western avenue, Los Angeles, for the practice of architecture. He wishes samples and catalogues.

### School and Masonic Hall

Messrs. Woollett and Lamb, architects of Sacramento, have completed plans for a two-story five-room reinforced concrete school building at Orland, Glenn county, California. Bids will be received until July 1st. The same architects have also completed plans for alterations to the Masonic Temple at Chico. Both commissions will approximate $65,000.

### Theater Building

Messrs. Wm. Curlett & Son, 518 Merchants National Bank building, Los Angeles, have completed plans for a Class A theater building to be erected at Phoenix, Ariz., for Rickards & Nace. The building will be 56x125 feet in size and will contain an auditorium to seat 1000 people, two storerooms, two waiting and twelve office rooms.

### Mountain Lodge

Mr. Carlton M. Winslow, 1134 Van Nuys building, Los Angeles, is preparing plans for a one-story frame mountain lodge to be erected in San Marcos Pass, Santa Barbara county, for Mr. C. K. G. Billings.

### Sacramento Fire House

Mr. Frank G. Miller, City Engineer of Sacramento, has been instructed to prepare plans for a fire house on Second street, between K and L streets, that city, the structure to cost $40,000.

### Colonial House

Mr. Warren Skillings of San Jose has completed plans for a $12,000 Colonial house to be built at Mountain View, Santa Clara county, for Mrs. J. L. Gould.

### Garage and Theater

Mr. Myron Hunt, 1107 Hibernian building, Los Angeles, is completing plans for a garage and moving picture theater to be erected at the Ambassador hotel site, Wilshire boulevard, near Catalina street, Los Angeles, for the California Hotel Company. The garage will be a two-story structure, 350x60 feet, with servants' quarters in the second story. The theater will seat 600 people. Both buildings will be of reinforced concrete construction.

### San Jose Architect Busy

Mr. Chas. S. McKenzie, architect of San Jose, has completed plans for a $30,000 reinforced concrete automobile sales building and garage at Santa Clara and Sixth streets, San Jose, for Messrs. Campen Bros. Mr. McKenzie has also drawn plans for an $18,000 residence for Mr. Warren Pomeroy. It is to be built on the Alameda, one of the residence show places of San Jose.

### Insurance Building

Mr. Horace G. Simpson, 110 Sutter street, San Francisco, is preparing plans for a part four and part one-story office building to be built on the south side of Bush street, near Montgomery, San Francisco, with a frontage of 60 feet on Bush street, for the California Pacific Insurance Company.

### Bank and Store Building

Messrs. Walker & Eisen, 1403 Hibernian building, Los Angeles, are preparing plans for a one-story and basement brick bank and store building to be erected at the southeast corner of Seventh and Alvarado streets, Los Angeles, for the Home and Hibernian Savings Bank.

### Club House

Mr. Myron Hunt, 1107 Hibernian building, Los Angeles, is preparing plans for a club house to be erected at the Ambassador golf course, on Pico boulevard, near the Speedway, Los Angeles, for the California Hotel Company. The building is being designed in California ranch house style.

### Country Place at Mt. Eden.

Messrs. Wolfe and Higgins, San Jose architects, have made plans for a large country place at Mt. Eden, for Mr. M. Oliver. Besides a dwelling there will be a tank house, laundry, pumping plant, etc. The improvements will cost $20,000.

### A. S. C. E. to Meet in Portland

The next annual meeting of the American Society of Civil Engineers will be held at Portland, Ore., August 10 to 12, inclusive.

## *With the Engineers*

### Interstate Commerce Commission Engineer Discusses Valuation of Railways

AT the regular monthly meeting of the San Francisco Chapter of the American Association of Engineers held on June 3rd, Mr. R. A. Thompson of the Engineering Board of the Interstate Commerce Commission addressed the members of the profession on the subject of "Federal Valuation."

Over two hundred engineers were present to hear the Dean of Valuation Engineering work discuss the greatest appraisal job in the world.

The speaker told of the twenty-five years of effort, starting in 1888, to secure passage of the act directing the Interstate Commerce Commission to evaluate the railways and other interstate carriers. The act was finally passed on March 1, 1913, and field work begun on February 1, 1914. The field work will be completed by the end of the year, and in a few years, the reports to the commission will be filed, hearings held and final values accepted or adjudicated by the courts. After the values are determined they will be kept up to date through railway reports and Government engineers' review, and will serve for all times as a gauge to determine rates, taxes, sale value, stock and bond limitations, etc. The data is collected so that the courts interpret the word value in the act to mean other than cost less depreciation.

The stupendousness of the undertaking is realized when we consider, that 388,000 miles of railway, 320,000 miles of telegraph and 300,000 miles of telephone wire are involved. The property book values are near twenty-two billions of dollars. About 65,000 miles of railway have been completed and have shown no great difference between the book and appraisal values. The remainder will be completed at the rate of 5,000 miles per month. The telegraph valuation is proceeding rapidly, but no work has started on the telephone valuations.

The recent transportation act enlarges the powers of the Interstate Commerce Commission and emphasizes the use to be made of the appraisal in deciding rates and allowable bond issues.

This has been an engineering and accounting job from its inception. Partisan politics have not hampered the specialists in their work. When completed it will be a monument to the credit of the profession and will demonstrate what Americans can do when necessity points the way.

### Engineers Endorse Paper Relief Plan

The National convention of the American Association of Engineers has en-

dorsed the scheme to use Alaska timber for reducing the shortage of paper suggested by Secretary of Agriculture Meredith, and pledged the support of the engineers in aid of this project.

### Hoover Joins American Association of Engineers

Mr. Herbert Hoover has affiliated with the American Association of Engineers. He is Member No. 2000 and has received the certified grade.

The San Francisco Chapter will welcome Mr. Hoover on his first visit home when his duties on the Industrial Board permits. It will be recalled that General Wood is member No. 1000 of the American Association of Engineers, having joined a few months ago.

This new engineering body is composed of technical engineers, formed to look after the non-technical interests affecting the welfare of engineers and to offer to the public advice on civic matters involving engineering judgment.

### Professional Engineers Condemn Unionism

The national convention of the American Association of Engineers, which was held in St. Louis, May 10th and 11th, endorsed a statement by the Directors of the association reading in part as follows:

> We believe in organized representation for the correction of wrong, the advancement of the engineering profession and service to the public, but are opposed to methods inconsistent with the dignity of the profession and which would lessen public confidence in engineers. The American Association of Engineers recognizing the many fundamental differences between the principles and objectives of the trade union, and an organization of professional men expresses the opinion that an engineer cannot subscribe to the tenets of both.

The resolution recommended the expulsion from the Association of engineers who advocate strikes or similar methods of securing their ends.

### Pinchot Addresses Philadelphia Engineers

Mr. Gifford Pinchot, Pennsylvania State Forester, in a recent address before the Philadelphia Chapter of the American Association of Engineers, declared that one-sixth of their state was a desert due to timber waste, and keeps eighty million dollars annually out of the state income. He predicts that in ten years the Pacific Coast will be furnishing the bulk of the nation's lumber at a freight cost of six hundred and fifty million dollars.

### Federal Engineers Convene

On May 22, the first convention of the Federal Department of the American Association of Engineers was held in Washington to group and district all professional engineers employed by the Government. Delegates from all of the larger engineering offices were in attendance.

### Hawaii Engineers Organize

The two highest ranking officials in the Territory of Hawaii, except the Governor, are officers of the newly organized Honolulu Chapter of the American Association of Engineers.

The president of the Chapter is Mr. John H. Wilson, Mayor of Honolulu a civil engineer from Stanford University. The Vice-President is Mr. Lyman H. Bigelow, Superintendent of Public Works and chairman of the Board of Harbor Commissioners of the Territory of Hawaii, a civil engineer from Cornell University. The Chapter has forty-four members and is the second American Association of Engineers chapter outside of the States, the first being located at Anchorage, Alaska.

### Professional Engineer Loses Life in Strike

Loyalty to his employer during the recent switchmen's strike resulted in the death of Mr. J. W. Wilkinson of Cleveland, a member of the American Association of Engineers.

He was injured by a freight train on April 23, while serving as a volunteer switchman on the Nickel Plate Road of which he was Office Engineer. During the recent outlaw strike, many railway technical experts volunteered to replace switchmen and these engineers have been commended by the American Association of Engineers.

### Governor Frazier Guest of American Association of Engineers

The North Dakota Chapter of the American Association of Engineers recently gave a banquet in honor of Governor Frazier at Bismarck.

The Governor has shown his appreciation of the value of the professional engineer to society by appointing many to prominent political posts.

### Improvised Pair of Beam Compasses

Every engineer and draftsman has beam compasses. Here is some advice in assembling the parts.

Straddle your bow pencil near one end of a folding pocket rule, clamping bow with its own gage screw, similarly place bow pen near the other end of rule. The rest of the adjustments will be clear.

### Engineers Pledge Candidates

The American Association of Engineers has asked all Presidential candidates to declare themselves for or against

1 The present National Department of Public Works.
2 The National Budget.
3 Coordination [illegible] of National Resources.
4 Reclamation of Waste Lands.

# The Contractor

BUILDING CONSTRUCTION, BRIDGES AND ROAD WORK


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Vice-President—R. E. Miller, Puget Sound Bridge & Dredge Co., Seattle, Wash.
Secretary-Treasurer—I. N. Day, A. D. Kern & Co., Portland, Ore.
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Los Angeles, Cal.

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Treasurer, I. F. Atkinson.
Secretary, George A. Rogers, of Rogers Brothers Co.

EXECUTIVE COMMITTEE

Arthur Bent, Clare L. Peck, George A. Rogers, Godfrey Edwards, R. F. Ware, J. C. Edwards and Frank Foell.

## General Contractors of San Francisco

OFFICERS

President, Henry Jacks.
1st Vice-President, John Biller.
2nd Vice-President, P. J. Lynch.
Treasurer, Charles Wright.
Secretary, E. T. Thurston.

DIRECTORS

Henry Jacks, John Biller, P. J. Lynch, Thomas Elam, Charles Wright, C. M. Moore, A. H. Wilhelm.

## Working Rules of the New San Francisco Contractors' Association

CONSUMMATION of the plans for writing the general contractors of San Francisco in a single organization has been realized by the formation of the General Contractors of San Francisco, Inc. The new corporation is a non-stock, no-profit association of general contractors of the Bay counties.

The chapter was formed as an outcome of conferences of the joint committee recently appointed by the former General Contractors' Association and the general contractors of the Builders' Exchange.

The Bay counties contractors have adopted a new set of working rules, as follows:

On and after April 1, 1920, the following rules and conditions will govern the submission of proposals for private work in San Francisco by members of the General Contractors of San Francisco. The fact that a contractor member of this association is asked or permitted to bid on a job, will indicate that the party by or for whom the bid is invited or received subscribes and agrees to the conditions hereinafter prescribed.

1. All competitive proposals for a specific job will be based on uniform conditions, the same for all bidders. Each contractor invited to bid shall be supplied without charge with a complete set of plans and specifications, governing the work he has been invited to bid on, and shall have the exclusive use of same until the time set for opening bids.

2. Indistinct items and plans drawn to a scale less than one-eighth (⅛) inch to the foot will not be figured.

3. In order to avoid waste of time and cost of useless estimates, it is desirable that architects state with each call for bids the cost estimate on which the plans are based.

4. Proposals may be submitted in the form of a lump sum for the entire work, or in the form of lump sums for one or more sub-divisions of the work, or on the basis of actual cost plus a percentage or fee, as called for by the owner, or his agent; but, unless bidders are furnished free of charge with a complete schedule of quantities, competitive proposals will not be submitted on more than one basis for a given job, nor will any proposal at all be submitted on a job on which proposals are requested on more than one basis; nor will proposals be made on plans on which other proposals have been tendered by a member or members of this or allied associations within the past three months; provided, however, that if within said period of time it appear that all bidders have withdrawn their proposals, in such case the owner or his agent may call for new bids regardless of the time limit hereby established.

In order that these rules may be enforced and the right of bidders protected, members immediately after receiving plans and specifications of job on which they propose to bid, will report to the secretary the name and location of the job, the name of the architect, the conditions on which bids are called for, and the time and place of opening bids.

The secretary will arrange to have one member present at each letting or conference wherein members of the association are interested, whose duty it shall be to report the result, including names of all bidders and amounts of their bids.

5. Each proposal will be submitted to the owner or his agent sealed and marked on the outside with name and location of job, name of architect, time and place where bids are to be opened, and name and address of the bidder.

Bidders will file duplicates of their proposals, sealed and marked as above, in the office of the Secretary of the association before the time set for opening bids, same not to be opened except in case of controversy after official opening of original bids.

6. All proposals will be opened and read by the owner or his agent at the same prearranged time

and place, in the presence and hearing of such bidders or their representatives as care to attend.

7. The fact that a contractor's bid has been received and opened by or for an owner is prima facie evidence that he is deemed competent and desirable by the owner. If work goes ahead with no greater modification in original plan than five per cent (5%) of his bid, the contract will be awarded to the lowest bidder. If the owner desire further to modify the cost of the work he will alter the plans and specifications accordingly and if the changes amount to no more than fifteen per cent (15%) of the lowest bid, the lowest three bidders only will figure the changes, with the understanding that the lowest bidder of the three will be awarded the job.

If the specified modifications amount to more than fifteen per cent (15%) of the original low bid the owner will revise the plans and specifications accordingly and may call for bids as provided above for a new set of plans.

Modifications and alterations provided for herein are understood to include only bona fide changes in the work covered by the original bids and affecting correspondingly the cost of the building as a complete structure. Revised segregations of necessary elements of the complete structure, whereby portions of the work are merely added to or omitted from the general contract as originally described, will not be deemed bona fide changes with respect to the rights of the original bidders as hereinabove determined.

8. Bidders will not segregate nor itemize a proposal out of conformity with terms of the call for bids, nor quote unit prices other than for excavation, pile driving, foundations, and structural and reinforcing steel, prior to award of contract.

Bidders will not submit more than one original and one alternate proposal on the whole or any single subdivision of the work.

9. The standard Contract "Form A" as heretofore published by the General Contractors' Association, Inc., of San Francisco, shall be considered as embodying basic conditions under which lump-sum proposals are submitted; and where no other definite form of contract accompanies the specifications, said "Form A" shall be used to govern all work where applicable.

10. Where competitive proposals are called for in conformity with these rules, members are prohibited from participating in pools or other agreements whereby bona fide competition will be denied the owner.

11. Members are prohibited from submitting proposals to owners or agents unless invited to do so. This shall not be construed to deter members from soliciting business on legitimate lines.

12. Members are prohibited from disclosing to anyone, prior to acceptance of same, a materialman's estimate or quotation of a specialty contractor's bid.

13. Before negotiating with an owner or agent regarding a project involving on the contractor's part the submission of an estimate of cost, a member will first ascertain from his association that there are no similar negotiations pending on the same project involving members of his or allied associations. On actually opening bona fide negotiations, a member will forthwith notify the association, giving name and address of owner and location and character of the project. During the progress of negotiations, at intervals of not more than one month, the member will advise his association in writing as to the status of the case, and will report in writing to his association immediately either the breaking off of negotiations or the securing of the job.

Notice from owner or agent that negotiations have been abandoned with respect to any member will operate to clear the project.

14. Special cases wherein any of the foregoing rules appear to be inapplicable or to work unwarranted hardship, may be referred to the association and special consideration will be given same.

## Store and Loft Building

Mr. Milton Latham, 454 Montgomery street, San Francisco, has prepared plans for a two-story store and loft building to be erected on Eddy street, near Jones, San Francisco, at a cost of $40,000.

## BUILDERS' DAY—JULY 3rd

"BUILDERS' DAY," which had its inception at California Redwood Park (Big Basin) last September, is to become an annual event in the life of the California architect, contractor and material man. Saturday, July third, has been fixed as the date for celebrating Builders' Day once again, and committees are working indefatigably to make the affair a big success. Mr. Clarence F. Pratt, who originated the idea, has named the principal working committees and to read their names is to convince oneself that the celebration is going to be a "go."

COMMITTEES

Committee on Arrangement: John D. McGilvray, chairman; William S. Scott, Ralph McLeran, John P. Horgan, George R. Gay, H. J. Brunnier, Clarence F. Pratt, James Fennell, F. Dixon (Sacramento Builders' Exchange).

Committee on Games and Prizes: R. B. Cleghorn, chairman; Jack Bender, Herbert Alden, Al White, Henry Thomas, W. E. Whalin (General Contractors' Association, Oakland), A. G. Sherman.

Committee on Entertainment: Al Pape, chairman; William A. Rainey, Edgar G. Oden, Rod. Guyett, Edward F. Flanders, Percy J. Walker.

Committee on Transportation: Frank Mordecai, chairman, Charles Munson, Charles Holloway, Jr., Emil Hogberg, W. J. Feary, Milt Clark, Al Durbrow.

"Builders' Day" is to boost the Forest Play—"The Soul of Sequoia." The Forest Play is to advertise California Redwood Park (Big Basin), a 10,000-acre park belonging to the people of California. The building industry (architects, engineers, contractors, and building material dealers) of San Francisco and vicinity are doing their part to advertise Big Basin by holding a "Builders' Day" on the same date that the Forest Play is produced. The building industry appreciates the wonderful help Big Basin has received from the Sempervirens Club of California, who are producing the Forest Play.

The Team and Auto Truck Association, through one of its members, Mr. Frank O'Shea, has donated the use of a truck to transport the prizes from San Francisco to Big Basin.

The following attractive program has been arranged for the day's outing:

3:00 to 6:00 p. m. Athletic events in front of Warden Dool's office. Deputy Warden Weaver will call wild deer from the mountains.

6:30 to 8:00 p. m. Dinner.

8:30 to 10:30 p. m. Attend the Forest Play, "The Soul of Sequoia."

11:00 p. m. to 12:30 a. m. Masquerade ball.

Dance Committee: John D. McGilvray, floor manager. Assistants: George Wagner, Charles W. Gompertz, A. B. Swinnerton, H. C. Doerr (San Jose Builders' Exchange). Judges: Mrs. Clarence F. Pratt, Mrs. Erwin Knowles, Mrs. John D. McGilvray.

12:30 a. m. until [illegible] "Midnight Follies" beside camp-fire.

Drawing of bellies' gate prizes. Winning numbers posted in front of Inn on Sunday morning.

## Addition to Hospital

Messrs. Bakewell & Brown are preparing plans for a $350,000 nurses' wing to the Lane Hospital at Sacramento and Webster streets, San Francisco.

## WHEN STRIKES COME

(Continued from Page 111)

goat and I want to ask, "Does this Government know I'm the goat, and what are you going to do about it?"

A bunch of boomers get a hold on the natural water resources and overcapitalize; I pay twice for water. That's capital. When the weather turns cold, some coal miners in Pennsylvania or Colorado decide to strike—I don't know what for and there isn't any coal and my baby gets the croup and nearly dies. That's labor.

I'm not jealous of what they get, but I think I ought to get something besides the honor of paying the bills and suffering the inconveniences.

I want to know when this Government, conceived in liberty, will give me a chance to plan my life just a little bit on a permanent basis. I can't strike for a raise in pay—I have to deserve it. I haven't accumulated capital enough to live on without work, and I want to know sure what the price of eggs will be tomorrow morning.

You know who I am. I'm the Average Man. I earn more than $1,300 a year, but not much more. I spend my salary for sane and sensible living. I have ambitions for my boy and girl, maybe a college education, and about every thirty days these two highwaymen, capital and labor, come along and hold me up! Whichever one wins, I lose, and I want a basis.

I say economic theories are all hunky-dory, but a little common sense added ain't so bad at that! I say sympathy is all right until we develop professional sympathy grabbers. I say that the unions are all right until they become offensive instead of defensive.

I send my wife and kids on a vacation. Before the vacation is half over I have to wire them to rush back because there is going to be a railroad strike. Their good time is spoiled because they might be injured on the way back, maybe with a brick or a derailment. I have to spend $100 to go to meet them. One hundred dollars—the price of a winter suit and a pair of socks. Why? Because this country knows how to organize a strike, but not how to disorganize one.

And that's my kick, gentlemen. I want to know what you are going to do for us fellows who own the cottages and the Fords and who don't belong to the unions and don't wear overalls and don't own any banks. We buy what labor makes with capital's profit tacked on, an' I want to know where we get a square deal.—C. V. Young in Power.

### Los Angeles Architects Entertained.

Echoes of the recent outing which the Los Angeles architects enjoyed, as guests of the San Diego Architects' Association, have reached as far north as San Francisco, and from all accounts the Southern California contingent had "some time" while in San Diego and across the border line in Tia Juana.

Messrs. E. M. Scofield, F. J. Twaits and other officials of the Pacific Marine & Construction Company, personally conducted the architects over the concrete shipbuilding plant, and through one of the concrete ships being built at San Diego.

The trip was continued to North Island where the buildings for the naval air school were inspected, under the guidance of aviation officers. Many of the party ascended to the top of the tower on the administration building, which is 112 feet high. The hangars for the sea-planes were particularly interesting, especially the revolving doors which are 105 feet wide to permit the passage of the large sea-planes which have a wing spread of 104 feet and will carry fourteen men with equipment.

A short business meeting and luncheon was held at the Grant Hotel at noon. The meeting was presided over by Mr. William Templeton Johnson, president

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POPLAR--WALNUT

BOXWOOD-EBONY-IRONBARK
JENISERO-KOA-SPANISH CEDAR
LIGNUMVITAE-MAHOGANY
ROSEWOOD-TEAK-RED BEAN
SPOTTED GUM-CIRCASSIAN WALNUT
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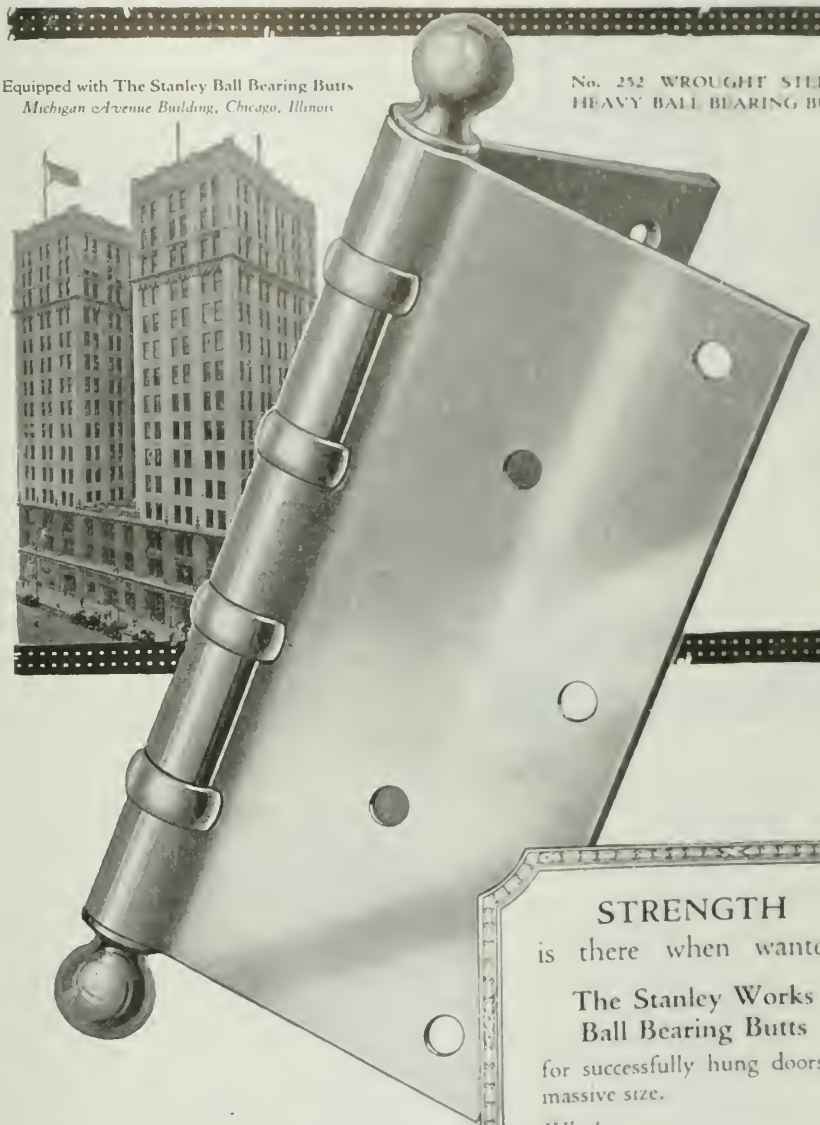

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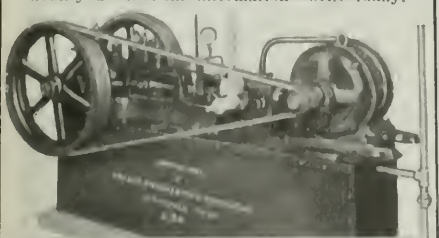

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of the San Diego Architectural Association. Mayor L. J. Wilde of San Diego, welcomed the architects to his city and Mr. John W. Mitchell, honorary member of the Southern California Chapter, responded to the mayor's address. President Edwin Bergstrom presided over the short Chapter meeting.

After the luncheon, the party went by automobiles to Tia Juana, witnessing the horse races and visiting the Monte Carlo. A spanish dinner was served in the evening.

Mr. William Templeton Johnson was elected to membership in the Chapter. The officers of the San Diego Architectural Association are. William Templeton Johnson, president; Robert Halley, vice-president, and E. C. Decker, secretary-treasurer. Mr. Richard S. Requa was chairman of the entertainment committee and was assisted by Mr. William H. Wheeler in preparing and executing the program.

### Washington State Chapter, A. I. A., May Meeting

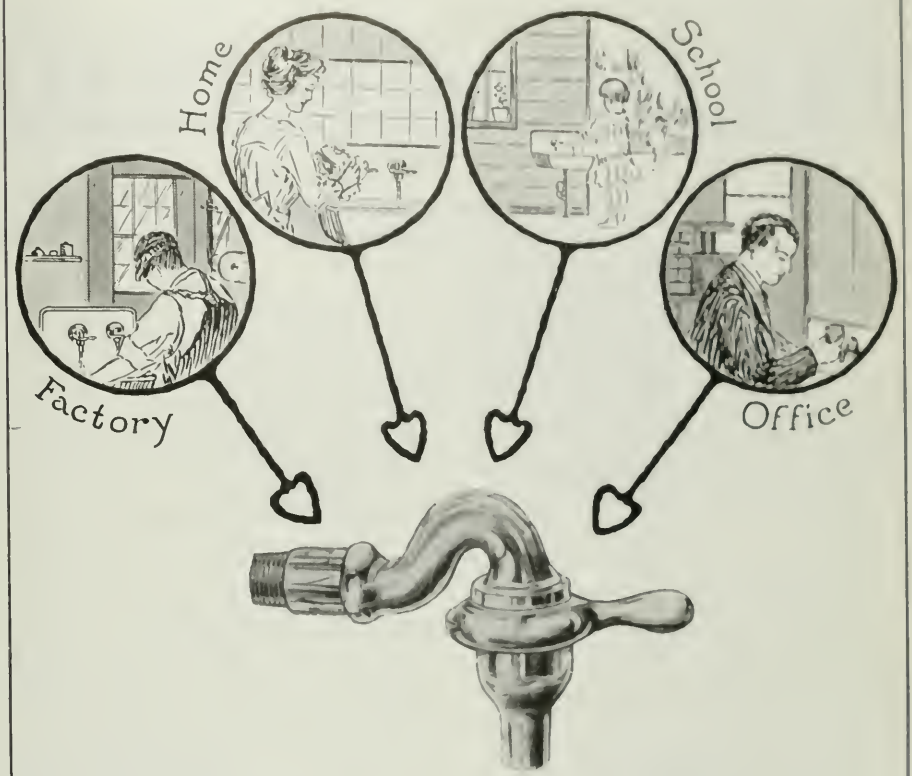
Following are the official minutes of the 260th meeting, held Wednesday, May 5, at 6:30 p. m., at the Blue Bird Cafe, Seattle, Washington. The guests of the evening were Messrs. Dimock and Slater.

A communication from the Indiana Limestone Quarrymen's Association, referring to a moving picture of the process of quarrying, was read and left in the hands of the Executive Committee for action.

A motion by Mr. Loveless that the Chapter join the National Fire Prevention Association was seconded by Mr. Siebrand and the motion carried.

Mr. Alden then introduced Mr. Amos Slater, Chairman of the recent conference of the Engineers of the Northwest and President of the Associated Engineers' Society of Seattle (one of the guests of the evening) who addressed the meeting in connection with the engineering conference recently held in this city, making particular reference to the joint registration bill for engineers and architects, approval of which was voted by the engineering conference. Mr. Slater presented a very interesting case for the joint registration bill, going into some of the details of the proposed legislative provisions. Discussion on this question followed, and it was moved by Mr. Huntington and seconded by Mr. Richardson that the Legislative Committee hold a joint meeting with a committee from the Engineering Association to discuss this proposed joint registration law.

Following this discussion Mr. A. H. Dimock, City Engineer for Seattle, addressed the meeting on the subject of the proposed National Department of Public Works, a bill creating which

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has been introduced in Congress. Mr. Dimock outlined in detail provisions of this legislation, bringing out the fact that it is proposed to divorce all non-engineering functions from the present Department of the Interior and to add to this new department all engineering functions now carried on by other governmental departments. The new bureau is to be known as the National Board of Public Works. The organization is to consist of a Chief Secretary and four Assistant Secretaries, the four Assistant Secretaries to have in charge the following branches: (1) Architectural, (2) Engineering, (3) Scientific, (4) All land matters connected with the new department. It was pointed out that there are now not less than 27 bureaus having jurisdiction over architectural matters connected with governmental work and as many and more governing various branches of engineering. A certain degree of proposed standardization was alluded to and active cooperation between the architectural and engineering bodies in support of the bill urged.

Mr. Dimock's talk was followed by some discussion and it was moved by Mr. Loveless that after conferring with the Institute to ascertain what movements, if any, were to be made by the national body, that the Executive Committee send a resolution in favor of the bill to the Washington members in the Senate and House. It was moved by Mr. Huntington that a special committee be appointed by the President to work with Mr. Dimock's committee, having the fostering of the bill in hand. The motion was seconded by Mr. Richardson and passed.

Mr. Piper, who was also a guest of the Chapter, spoke briefly in reference to the American Association of Engineers, a recently formed body which is carrying on general welfare work for the advancement of the engineering profession.

## Los Gatos Country House

Mr. Henry C. Smith, Humboldt Bank building, San Francisco, has prepared plans for a ten-room country house to be built at Los Gatos for Mr. Samuel Rucker, of the Rucker-Fuller Desk Company, San Francisco, at a cost of $25,000. Mr. Smith is also preparing plans for a $25,000 country house at Carmel, Monterey county.

## Award Big Elevator Contract

The P. J. Walker Co. of San Francisco has let a contract for six passenger and two sidewalk elevators to the Otis Elevator Company, for the new fifteen-story office building to be erected at Pine and Montgomery streets, San Francisco, for the Commercial Union Assurance & California Fire Insurance Co., The self-levelling traction device will be used.

## Program of Competition for Treatment of a Park

FOLLOWING is the program of a competition for the treatment of the aquatic park, foot of Van Ness avenue, San Francisco, California.

It is proposed to treat the area at the foot of Van Ness avenue, bounded by Van Ness avenue, Larkin street, Beach street and Jefferson street, and it is intended to develop this area together with that which lies to the north of Jefferson street, between Fort Mason and Hyde street, as an aquatic park.

### THE REQUIREMENTS

The following are the requirements:

1. A bathing beach. For this purpose the maximum frontage of the existing beach must be retained.
2. An inland open air swimming pool not to exceed 10,000 square feet in area.
3. Bath house for men and women accessible to both the beach and swimming pool. This house to contain lockers and the necessary conveniences and dependencies.
4. A wading pool.
5. Boat club house. This is to be one story in height and divided into three units; each unit to be about 50x80 feet. Each unit to be supplied with a landing float.
6. A boat landing for the accommodation of parties landing from yachts.
7. Provisions should be made for a dance platform, handball, tennis, and basketball courts, band stand, and public comfort station.

The pier at Fort Mason will probably be developed as a pleasure pier by the United States Government. The treatment of this should be incorporated in the scheme.

There will be a connecting roadway between Beach and Polk streets and Van Ness avenue at an easy gradient to form a connecting link in the boulevard system around Fort Mason. The Spring Valley pumping station can be reconstructed to meet the proper treatment of this roadway.

The alignment and elevation of the Belt Line Railway is to conform to Drawing B-4305 of the City Engineer's office.

The existing pavement on Beach street, between Polk street and Larkin street, is to be preserved, if possible.

### THE DRAWINGS

The following drawings are required:

1. Plan at the scale of 1/32 inch to the foot.
2. At least three sections at the scale of 1/16 inch to the foot. These sections should be developed to fully explain the scheme, and their location is left to the discretion of the competitors.
3. An aeroplane view of the whole scheme indicating relationship to surrounding landmarks.

All drawings are to be made on sheets of cold-pressed Whatman, 46x65 inches in size, with a single broad line for border. Plan and sections to be rendered in monotone wash.

Perspective may be washed in color.

Each design to be accompanied by a sealed envelope, unaddressed and lettered "Aquatic Park Competition," and containing a card bearing name and address of the author.

All inquiries for supplementary information must be anonymous and in writing and addressed "Aquatic Park Competition,"

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ATLAS WHITE

City Hall. Answers will be sent to all competitors and become a part of this program.

No supplementary information will be given after June 9, 1920.

Each design is to be delivered flat and unmounted in one sealed package containing all the drawings and the sealed invelope.

All packages are to be addressed "Aquatic Park Competition" and delivered to the City Hall on or before Monday, June 28, 1920, at 12 o'clock noon.

The drawings submitted are to be judged by a jury of five, consisting of the committee appointed by the Board of Public Works for the conduct of this contest:

M. M. O'Shaughnessy.....City Engineer
John Reid, Jr. .....City Architect
Frederick H. Meyer .....Architect
John Bakewell .....Architect
J. E. Scully.....Representing Recreation League

The following prizes will be awarded and announcement made not later than July 10, 1920:

| | |
|---|---|
| First prize | $250.00 |
| Second price | 200.00 |
| Third prize | 100.00 |
| Fourth prize | 50.00 |
| Fifth prize | 50.00 |

The following documents accompany this program, and can be obtained at City Engineer's office, Room 368:

Basic plan No. B-4305.
Tentative plan No. B-4117.
Tentative plan No. B-4175.

## Stanley Works Continues to Expand

When one very old and well established organization purchases the plants, properties and good will of another very old and well established industry, it is of considerable note to the outside world as well as to all parties concerned. Much interest, therefore, is attached to the announcement that the Stanley works has purchased the going manufacturing business of The Stanley Rule & Level Company.

The Stanley Works will now own and operate some twelve different plants and properties, located where for years the workmen have grown up and become accustomed to the exact requirements needed in the production of the particular articles that are manufactured in these factories. In connection with these are operated open hearth steel works, hot and cold rolling mills, foundries, timber lands and saw mills for furnishing much of the raw material used. There are also engineering and machine shops for the design and construction of our own special machinery, and hydraulic plants for furnishing electric power. The principal factories for the production of the finished product, and the main offices of the company, are in New Britain, Conn., but there are other factories located at Niles, Ohio; Newark, New Jersey; Bridgewater, Massachusetts; South Shaftesbury, Vermont; Bridgeport, Connecticut; Plantsville, Connecticut; in Canada, at Hamilton, Ontario, and Roxton Pond, Quebec, and at Kobe, Japan.

The Stanley Works was founded in 1843 by Mr. F. T. Stanley and incorporated as a joint stock company, under the present corporate name, in 1852. The Stanley Rule & Level Company was incorporated under that name in 1858, being a combination of the firms of Hall & Knapp and of A. Stanley & Co., which had been incorporated some years previous.

The present consolidation unites the manufacturing interests of the two Stanley companies that have grown side by side for almost seventy years, each developing its separate line of products for the hardware trade. During that period, there have been many common interests. During the earlier years, the same salesmen frequently represented both companies, and in some foreign fields such arrangements still exist.

## Book Review

THE HOUSING BOOK. Compiled by William Phillips Comstock. New York: The William T. Comstock Company; 132 pages, 8½x11 inches, cloth. Price, net, $3.

This book presents a selection of the best that was developed to meet the housing needs of the war industries and shows what was actually produced through the efforts of the most capable designers in the country, aided and supported by the best of engineering practice. The Government had at its call what no individual ever could have and that is the best individual efforts of the most capable men spurred on by patriotism. The result may be read in the illustration of every small house that is shown in this book. The elements of planning were most extensively studied and the result is a series of plans which are most economical to build, and when built are most satisfactory. There is sufficient variety in exterior designs to meet any one's taste, both in style and in selection of material.

It is not the purpose of this book to show all that was produced in the war developments, but to show a selected variety. It is the hope of the writer that in its pages will be found the answer to the housing problem for the average individual, and that to large corporations who have taken upon themselves the housing of their employes there will be a helpful variety of suggestions. A number of village sites are shown, giving the layout of the streets and starting with the single family house, there are twin houses, double deck type for two and three families and buildings which approach the apartment in housing as many as nine families within the given four walls.

The book is handsomely and substantially bound in cloth to meet all the wear and tear that a book can stand.

# Solving The Garbage Nuisance

ONE of the bugbears that confront many a housekeeper in her morning round of duties is the disposal of garbage. Another two-in-one arrangement has been put forth which seems to solve this big problem of garbage disposal—a problem for the housewife, for the building-owner, and for the city. It is an incinerator that is not a big, cumbersome piece of machinery which comes to the home or apartment house in some big truck, and costs a lot of money. It is, instead, just an incinerating chamber built in the regular chimney flue, where possible in the kitchen chimney, otherwise in an accessible rear hall, or on the back porch. The device may be installed in a modern flat building kitchen, with the receiving-hopper door convenient to the sink and work table, and the ash-receiving grate in the basement. The whole problem disappears when it is used.

THE GARBAGE INCINERATOR
The little hopper door in the chimney flue near the stove takes care of all kitchen refuse

It would be impossible to tell the number of great advantages to health if garbage were quickly destroyed and not allowed to accumulate either in the small space of the kitchen sink, on the back porch in the garbage pail, or in the alley. There is no doubt whatever that if all garbage were immediately destroyed, and all food kept covered, the roach exterminators would go out of business almost immediately.

This little incinerator costs nothing to operate. When the chamber is nearly full it is lighted by tossing in a piece of lighted paper, and the whole mass burns without further attention or added fuel. It works on the principle of the by-pass grate and the by-pass flue, which allows a free circulation of air and a continuous supply of fresh oxygen to reach the point of actual combustion. This arrangement of draft permits a burning from the top downward with perfect combustion over the entire surface. It also results in an almost complete consumption of all odorous gases so that no objectionable smoke or smell passes out of the chimney when the device is in use.

The operation of the incinerator is based on the fact that in a normal household there is more than enough waste paper, rags, and other combustible material to dry out the moisture from any ordinary supply of garbage. Garbage when dry is readily combustible, and needs only a little inducement to burn clean to a fine ash. Large pieces of vegetable matter, such as watermelon rind, may not be entirely consumed at the first burning, but they will be smoked, sterilized, and dried and will be fuel for the next burning. One of the greatest points of advantage of this incinerator is that it requires no gas or other commercial fuel.

Aside from its step-saving advantages and labor-saving qualities the fire in the incinerator thoroughly sterilizes the entire chimney flue, maintaining a perfectly sanitary condition from the bottom to the top of the chimney. The smoke soots the walls of the chimney flue, which prevents garbage from adhering

THE LANDLORD'S END OF THE INCINERATOR
In place of unsightly cans behind his apartment he has only this door through which his janitor takes the ashes and sterilized cans occasionally

## Some Present Day Research Problems in Electrical Engineering*

By PROF. VLADIMIR KARAPETOFF,
Cornell University.

THE most natural division of unsolved problems would be according to the types of apparatus, for example, into problems in the design and operation of large turbo-alternators, improvements in lamps, circuit-breakers for larger currents and higher voltages, etc. Such problems may be multiplied ad infinitum, and I should not venture to express my personal opinion upon their relative importance.

One division of research problems that seems to me to be quite essential is based upon the caliber and mental equipment of the investigator himself. There are problems of great practical importance which can and will be solved by the expenditure of a sufficient amount of money and time. Thus, during the war the shortage of certain materials led to a large number of tests on substitutes, and in some cases satisfactory materials were found by men of average ability and education. A large number of such tests, sometimes dignified by the name of research, is being carried on all the time. For example, there are certain varieties of mica on the market or lubricating oils offered by the principal concerns, and comparatively simple tests permit to determine the kind best suited for a given purpose, without employing men of unusually high caliber.

At the other end of the scale we have researches which require men of exceptional intellectual power and of wide erudition, researches which have baffled the most persistent efforts of many years and problems which remain unanswered in spite of the most alluring financial inducements. A reliable high-tension insulator and a simple variable speed alternating current motor may be mentioned as two such examples. In between these extremes there are innumerable gradations of mental caliber required for the solution of different kinds of research problems, and a clear realization of this fact is of utmost importance in the cultural development of the country. The tendency is to lay too much stress on material resources, equipment, and other external factors. A few men of superior caliber and thoroughly trained will accomplish results on which thousands of less gifted and not so thoroughly trained investigators may work for many years without much progress.

The necessity for better care of persons of exceptional scientific intellect is so urgent that it is legitimate to ask ourselves what our government, leaders of industry, educational institutions, or any other agencies are doing in this di-

* An address delivered before the Erie, Pa., Section of the A. I. E. E., May 17th, and the Cleveland Engineering Society, May 18, 1920

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rection. The answer is next to nothing. Moreover, in this imperfect world of ours it is no one's particular business to attend to the proper development of geniuses.

I do not have in mind a somewhat utopian scheme of breeding a race of intellectual giants by careful mating. I have in mind a perfectly feasible scheme of detecting exceptional children by suitable mental tests and then guiding them, year after year, to the full development of their mental powers. This is a proper function of the state and some day will become a reality.

Another classification of research problems is in accordance with their proximity to or remoteness from the direct industrial applications. A certain physical phenomenon, a mathematical formula, a peculiar alloy, etc., may up to a certain time possess no practical importance and be merely a subject of personal interest to a few investigators. Then one day someone discovers that that particular alloy or formula offers great practical possibilities and it becomes the subject of extensive industrial researches.

While such a state of affairs may seem perfectly natural and unavoidable, it has certain serious drawbacks for the best development of the art. The electrical industry owes many of its triumphs to so-called pure physical research, but until recently this industry offered mighty little encouragement to such research or to its exponents. Had the leaders of the electrical industry realized earlier the tremendous possibilities of physical research in improving commercial apparatus, then instead of sneering at "doctors" they would have used their talent long ago, and we would have been much further advanced in the applications of electricity than we are now.

In the early development of our industry we sneered at all research, then we called plain testing research, later we grudgingly tolerated industrial research that is, an investigation of a particular piece of apparatus in its complexity. Finally, it began to dawn upon some of us that an investigation of the very physical elements which enter into that particular piece of apparatus may lead to interesting discoveries. In this way it gradually became clear that a thorough investigation of the physical laws governing this or that branch of industry may be the quickest and the surest way toward remedying the difficulties in the operation and construction of certain pieces of apparatus. I should not be surprised if in a few years we should make a fad of pure research in industrial establishments and overdo it as we overdid safety and efficiency and patriotism and many other good things.

The next division of research problems is into experimental, mathematical, inventive, critical, indicative of new fields, etc. A clear understanding of this division on the part of investigators there-

selves and of their business managers will help scientific progress materially in that it will allow each one to apply his effort, imagination, and inspiration where it will bear the best fruit and it will enable two or more investigators to combine their efforts without jealousy or duplication.

Almost any big research problem involves some theoretical study as well as experimental skill, inventive ability, and patient search for the work of other investigators and its critical analysis. Only a few investigators possess all these accomplishments to the same degree, and it is in the hands of a harmoniously organized group of scientific workers of different talents that research leads to gratifying results.

A chain is strong only as its weakest link. Many a research worker struggled in vain with a problem for which he was eminently fitted, just because he failed to recognize this one weak link in himself or was too proud to ask for help on some particular point of difficulty.

The Anglo-Saxon race is individualistically inclined perhaps to a greater degree than the other civilized races. The Americans among the Anglo-Saxons are especially prone to exhibit the western pioneer spirit in research with all its virtues and shortcomings of which the utter disregard of the work of preceding investigators is perhaps the most characteristic one.

An outsider and often a manager thinks that research men specialize by subject, so that one knows all about direct-current machines, another all about transformers, etc. While to some extent this is true yet there is a much more thorough-going and desirable specialization according to the nature of the man's talent. One is especially gifted in arranging ingenious methods for accurately measuring difficult quantities, whether it be in a-c or d-c machinery, another can skillfully present a phenomenon or a relationship in a mathematical form, a third is particularly adept in finding out quickly and accurately all the preceding contributions on the subject and in assigning the proper relative value or trustworthiness to each.

The possibilities of cooperation in research on the part of persons of different temperament and ability go far beyond the confines of one industrial organization or even one country. International cooperation in research is just as important in view of the favorable and unfavorable racial idiosyncracies. Any one who follows European scientific magazines cannot fail to notice these racial distinctions in the treatment of identical subjects.

A student of the history of science can easily recall cases in which a scientific idea is born in one country and then is taken up by someone in another country and finally brought to a fruitful development in a third country.

Perhaps the best known example in our line is that of Hertz, a German, who acted as an intermediary between Maxwell, an Englishman, and Marconi, an Italian. A biologist could easily get examples of living organisms which have to live under different conditions at the various stages of their development. Thus the rust of wheat must live on barberry before it can live on wheat. We in this country with its polyglot population have had an exceptional opportunity to observe and to benefit by this cooperation right in our midst, even though in our Anglo-Saxon arrogance we are apt to look down upon our brothers from across the seas. There is hardly an organized institution for research in this country that cannot point to benefits derived from associates of foreign birth and training and point of view.

In conclusion I wish to point out that while first-class original investigators are born and not made, yet there is a great problem before our leaders in politics, industry and education, to facilitate the work of such men by granting favorable conditions for their creative activity. We ought to do this for our sake and for that of the coming generations. It is in the hope of contributing to the clear understanding of the conditions that promote the welfare of research workers that the preceding remarks are made.

### New Heating Firm

The Mechanical Engineering & Supply Company, Inc., has entered the building field in California, specializing in heating and ventilating public and private buildings, with offices and shop in Sacramento. The firm was recently awarded a contract for installing the heating and boiler plant in the Fresno High school, and heating systems in the Jefferson and Edison schools. Mr. J. B. Hawley, member of the company, is a graduate of the University of Illinois and was formally mechanical engineer for the State Department of Engineering. Mr. L. B. Luppen, the other active member of the firm, is a graduate of Cornell University and for the past two years served as chief engineer in the State Department of Engineering, Sacramento. Mr. Luppen was identified with the State for eight years and prior to that time was with the Mechanical Engineering Department of the City of San Francisco, and was engaged in work on the Hall of Justice and Palace Hotel.

### San Jose Residence

Mr. Chas. McKenzie, Bank of San Jose building, San Jose, is preparing plans for a large two-story frame and plaster residence for Mr. Warren Pomeroy of San Jose to cost $20,000.

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# Present Cost of Building Materials*

## With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, June 20, 1920.
All prices f. o. b. cars San Francisco or Oakland.

### American Institute of Architects' Fees

New work—6 per cent minimum basis.
Alterations—7 to 10 per cent as a minimum basis.

**Bond**—1½% amount of contract.

**Brickwork**—
Common, $38.00 per 1000 laid.
Face, $70.00 per 1000 laid.
Common, f. o. b. cars, $18.00 plus cartage.
Face, f. o. b. cars, $45.50 per 1000, carload lots.
12x12x3 in., 10¼c. per square foot.
12x12x4 in., 11¾c. per square foot.
12x12x6 in., 16¼c. per square foot.
Hod carriers, $8.00 per day.
Bricklayers, $10.00 per day.
Lime—$2.40 per bbl.; per ton of 2000 lbs., $18.50.

**Composition Floors**—30c. per sq. ft.
Klingstone, 27c. to 65c. per foot.

**Concrete Work** (material at San Francisco bunkers)—

| | |
|---|---|
| No. 3 rock | $2.25 per yd. |
| No. 4 rock | 2.40 per yd. |
| Niles pea gravel | 3.00 per yd. |
| Niles gravel | 2.25 per yd. |
| Niles top gravel | 2.50 per yd. |
| City gravel | 2.25 per yd. |
| River sand | 1.40 per yd. |
| Bank sand | 1.00 per yd. |

**Monterey Sand**—$1.50 per ton, car load lots, f. o. b. Lapis.
Fan-shell-beach, $3.00 per ton.
Cement (f. o. b. cars)....$3.88 per bbl.
Rebate for sacks, 25c. each.
Atlas "White" ....$9.50 per bbl.
Medusa cement .... 9.50 per bbl.
Forms ....$60.00 per M
Wage—
Laborers ....$6.00 per day
Concrete workers .... 7.50 per day
Cement finishers .... 9.00 per day

**Dampproofing**—
Two-coat work, 30c. per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $6.00 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $9.00 per day.

**Electric Wiring**—$8.00 to $15.00 per outlet.
WAGE—Electricians, $9.00 per day.

**Elevators**—
Prices vary according to capacity, speed and type. Consult elevator companies.

**Excavation**—
$2.00 per yard.
Teams, $12.00 per day.
Trucks, $30.00 to $40.00 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

**Fire Escapes**—
Ten-foot balcony, with stairs, $100.00 per balcony.

**Glass**—
(Consult with manufacturers.)
21 ounce, 25c per square foot.
Plate, $2.00 to $2.00 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 40c per square foot.
Note.—Add extra for setting.
WAGE—Glaziers, $9.00 per day.

**Heating**—
Average, $3.25 per sq. ft. of radiation.
WAGE—Steamfitters, $10.00 per day.

**Iron**
Cost of ornamental iron, cast iron, etc., depends on design.

**Lumber**—
Common (at building), $48.00 per 1000 (average).
Common O. P. (select), $98.00 per 1000 (average).
Flooring—

| | |
|---|---|
| 1x3 No. 1 | $121.00 per 1000 |
| 1x3 No. 2 | 113.00 per 1000 |
| 1x4 No. 1 | 119.00 per 1000 |
| 1x4 No. 2 | 113.00 per 1000 |
| 1x4 No. 3 | 106.00 per 1000 |
| 1x6 No. 1 | 121.00 per 1000 |
| 1x6 No. 2 | 118.00 per 1000 |
| 1¼x4 and 6 No. 1 | 121.00 per 1000 |
| 1¼x4 and 6 No. 2 | 119.00 per 1000 |
| Slash grain, 1x4 No. 1 | 90.00 per 1000 |
| Slash grain, 1x4 No. 3 | 85.00 per 1000 |
| No. 1 common rift to T. & G. | 65.00 per 1000 |
| Lath | 9.00 per 1000 |

Shingles—

| | |
|---|---|
| Redwood, No. 1 | $1.60 per bdle |
| No. 2 | 1.50 per bdle |
| Red cedar | 1.85 per bdle |

(Add cartage to above)

Hardwood Floors—
Maple floor (laid and finished), 30c. per foot.
Factory grade floors (laid and finished), 30c. per foot.
Oak (quartered, finished), 57c per foot.
Oak (clear), 41c per foot.
Oak (select), 30c per foot.
Oak, quartered, sawed, clear, select, 48c
WAGE—Floor layers, $9.00 per day.
In flooring the usual grades of oak used are

| | Grades | Sawed | Sawed |
|---|---|---|---|
| 5/16" | Clear | — | — |
| | Select | — | — |
| 1"x3" 13 1"x3" | Clear | — | — |
| | Select | — | — |
| | No. 1 | — | — |
| 2½ inch plain oak | | | 8c |
| 2½ inch quarter sawed | | | 7c |

* NOTE.—For country work add freight and cartage to prices given.

**Hardwood Floors (not laid)—**

| | | Per M ft. |
|---|---|---|
| 13/16x2¼" face | Clear quartered oak | $470.00 |
| | Select quartered oak | 360.00 |
| | Clear plain oak | 350.00 |
| | Select plain oak | 315.00 |
| | Clear maple | 225.00 |
| | Clear maple—white | 255.00 |
| 13/16x3¼" face | Clear maple | 230.00 |
| 1⅛x2¼" face | Clear maple | 235.00 |
| ⅜x2" face | Clear quartered oak | 310.00 |
| | Select quartered oak | 260.00 |
| | Clear plain oak | 260.00 |
| | Select plain oak | 225.00 |
| | Clear maple | 180.00 |
| | Clear beech | 175.00 |
| | Clear red beech | 215.00 |

**Veneered Panels—**

| 24x60 in., ¼ in., 3-ply, 1 side: | Per ft. |
|---|---|
| Ash | 26c. |
| Hungarian Ash | 39c. |
| Birch | 26c. |
| Curly Birch | 39c. |
| Elm | 24c. |
| Jenisero (Genezero) | 37c. |
| Southern Red Gum (plain fig.) | 32c. |
| Qld. Southern Red Gum | 39c. |
| Hawaiian Koa | 39c. |
| Maple | 24c. |
| Birdseye Maple | 47½c. |
| Mahogany | 39c. |
| Oregon Pine | 19½c. |
| Plain Oak | 31c. |
| Quartered Oak | 39c. |
| Walnut | 39c. |

**Millwork—**

O. P., $180 per 1000. R. W., $180 per 1000.
Double hung box frame windows (average) with trim.....$10.50 each
Doors, includ. trim (single panel) ..... 15.00 each
Doors, including trim (five panel) .....$12.00 each
Screen doors ..... 5.50 each
Window screens ..... 3.50 each
Medicine cases ..... 5.00 each
Cases for kitchen pantries seven feet high, per lineal foot ..... 10.00 each
Dining room cases same price, if not too elaborate,
Flag poles, per foot..... 1.50

**Labor—**

Rough carpentry, warehouse heavy framing, $16.00 per 1000.
For smaller work, average, $23.00, $30.00 per 1000.
WAGE—Laborers, $6.00 per day.
Carpenters, $8.50 per day.

**Marble**—(Not set) add 60c up per ft. for setting

| | |
|---|---|
| Columbia | $1.75 sq. ft. |
| Alaska | 1.75 sq. ft. |
| San Saba | 2.90 sq. ft. |
| Tennessee | 2.25 sq. ft. |
| Verde Antique | 4.00 sq. ft. |

**Painting—**

Two-coat work, 35c. per yard.
Three-coat work, 45c. per yard.
Whitewashing, 5c. per yard.
Cold water paint, 10c. per yard.
WAGE—Painters, $8.50 per day.

**Patent Chimneys—**

| | |
|---|---|
| 6-inch | $1.50 lineal foot |
| 8-inch | 1.75 lineal foot |
| 10-inch | 2.25 lineal foot |
| 12-inch | 3.00 lineal foot |

**Pipe Casings**—$8.00 each.

**Plastering—**

Interior, on wood lath, 70c. per yard.
Interior, on metal lath, $1.25 per yard.
Exterior, on brick or concrete, $1.00 per yard.
Portland White, $1.25 to $1.50
Interior on brick or terra cotta, 65c to 70c per yard.
Exterior, on metal lath, $2.25 to $2.50 per yard.
Wood lath, $10.50 at yard per 1000.
Metal studding, $1.00 to $1.25 per yard.
Metal studding, with lath and plaster, $2.00 per yard.
Galv. (metal lath), 38c. and up per yard, according to gauge.
Lime, f. o. b. warehouse, $2.40 per bbl.
Hardwall plaster, $21.00 per ton f. o. b. warehouse.
WAGE—Hod carriers, $8.50 per day.
Plasterers, $10.00 per day.

**Plumbing—**

From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $10.00 per day.

**Reinforcing Steel—**

Base price for less than car load lots, $5.50 per 100 lbs.
Car load lots, $5.25 per 100 lbs., f. o. b. San Francisco. (Mill delivery.)

**Roofing—**

Five-ply tar and gravel, $7.50 per square for 30 squares or over.
Less than 30 squares, $8.00 per square.
Tile, $35.00 per square.
Redwood shingle, $13.00 per sq. in place.
Cedar shingle, $13.00 per square in place.
Reinforced Pabco roofing, $8.25 per square.
WAGE—Roofers, $8.00 to $9.00 per day.

**Rough Hardware—**

Nails, per keg, $7.10 base and very scarce.
Deafening felt, $170.00 per ton.
Building paper, P. & B.,
1 ply, $6.50 per 1000 ft. roll.
2 ply, $9.75 per 1000 ft. roll.
3 ply, $14.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.50 per hank 100 feet.
Common, $1.75 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

**Skylights—**

Copper, $1.25 a square foot (not glazed).
Galvanized iron, 50c. a square foot (not glazed).
WAGE—Sheet metal workers, $9.00 per day.

**Store Fronts—**

Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.35 per lin. foot.

**Structural Steel—$150.00 per ton.**

This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.

**Steel Sash—**

Fenestra, from S. F. stock, 45c. per sq. ft.
Fenestra, Plant shipment, 40½c. per sq. ft.
(Includes mullions and hardware.)

**Tile—**

White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $2.00 per sq. foot, laid.

**Windows—**

Metal, $2.00 a square foot.

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Armco (American Ingot) Iron—*the metal beneath the enameling*—is the purest iron made, the most carefully manufactured.

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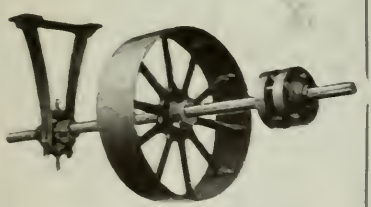

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### The "Ideal" Engineers' License Law

The engineers' license laws of Iowa, Oregon and Florida most nearly fulfill the requirements of a desirable and ideal license law, according to a recent report of the legislative committee of the Twin City Chapter of the American Association of Engineers. The report names the important features of a license law to be:

Definition of professional engineering, land surveying, and architecture, and of professional engineers, land surveyors and architects.

Qualification for registration and method of determining qualifications of applicants.

Reciprocity.

Application of law.

Revocation of license for cause.

Penalty for violation of act.

The committee recommends that in the license law proposed in Minnesota one of the members of the board of examiners shall be the dean of the engineering college in the University of Minnesota. A further recommendation is that members of the board should be appointed by the Governor from nominees submitted by the constituent engineering societies of the Joint Engineering Board of Minnesota.

The committee recommends that no exemptions to the law be made, except for Government and military engineers on Government or military work, or those constructing buildings for themselves and for their own use at a cost of five thousand dollars or less.

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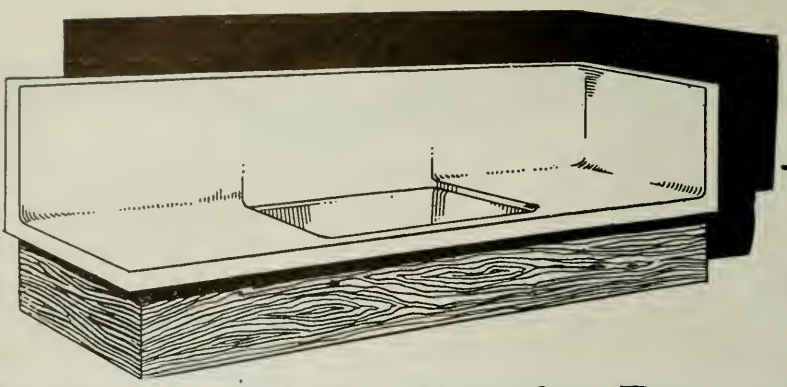

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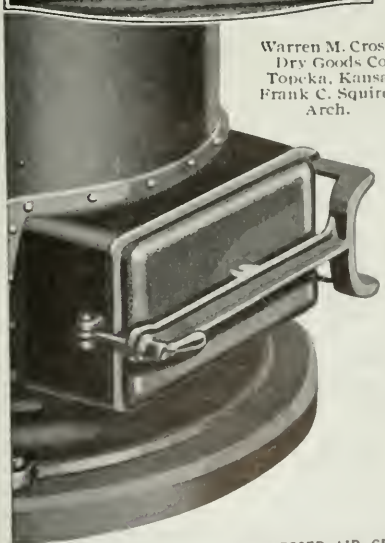

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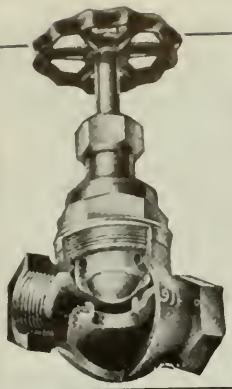

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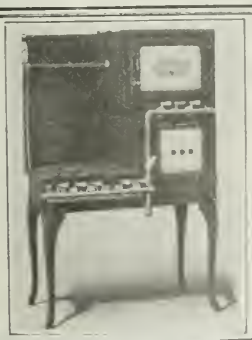

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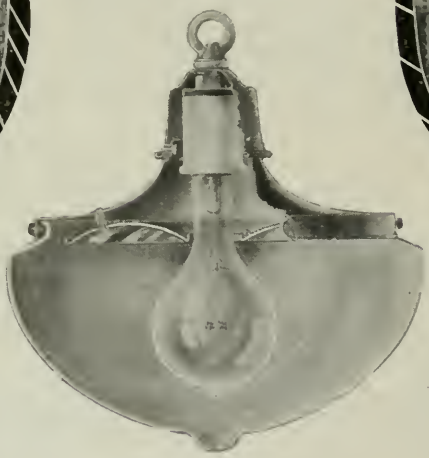

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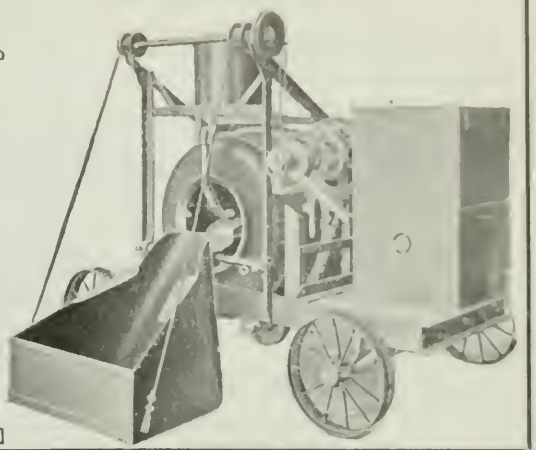

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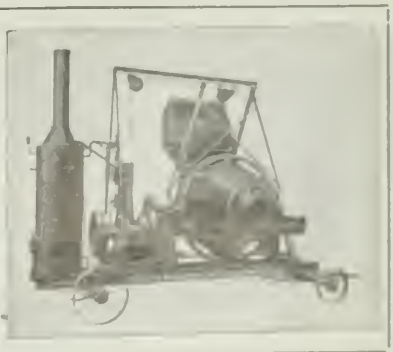

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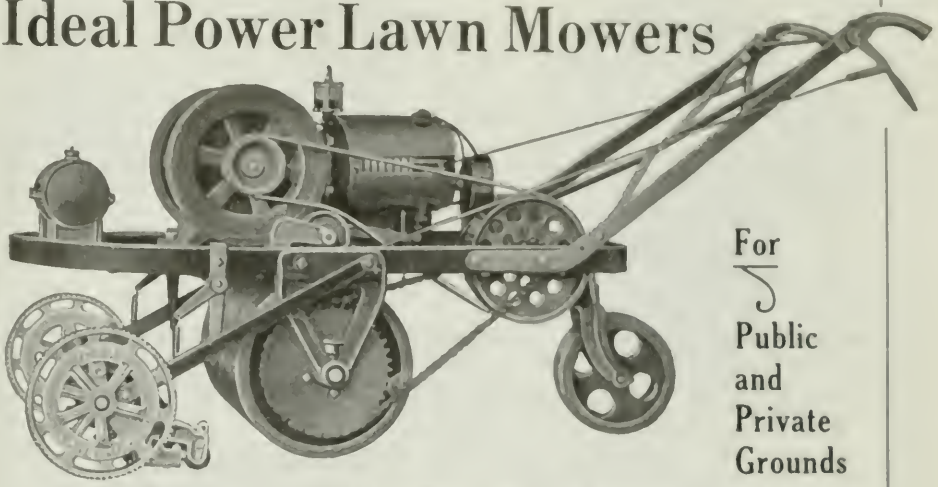

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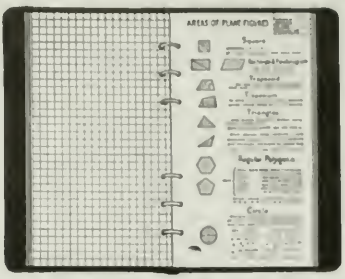

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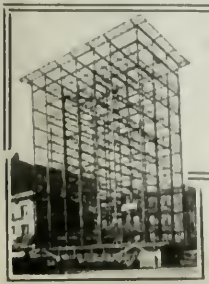

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